Rock Products
THE INDUSTRY'S RECOGNIZED AUTHORITY
APRIL · 1939

Coral rock supports new cement plant

DENVER Peripheral Discharge MILLS

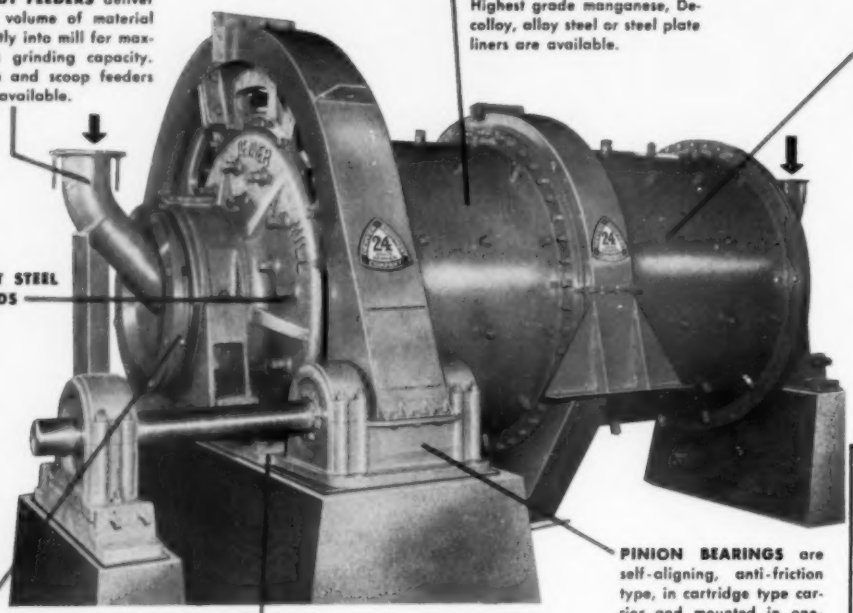
...turn waste or surplus stone into sharp, clean SPECIFICATION SAND— *simple, easy and profitable!*

COMPARE these Distinctive Features

SPOUT FEEDERS deliver high volume of material directly into mill for maximum grinding capacity. Drum and scoop feeders also available.

MANGANESE STEEL LINERS. Highest grade manganese, Decolloy, alloy steel or steel plate liners are available.

GREATER CAPACITY since both mill diameter and length are measured *inside* of *new* liners (rather than inside the shell).



CAST STEEL HEADS

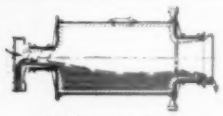
PINION BEARINGS are self-aligning, anti-friction type, in cartridge type carrier and mounted in one-piece housing.

SELF-ALIGNING TRUNNION BEARINGS on large mills are continuously lubricated from oil reservoir in base.

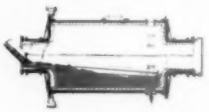
ADJUSTABLE, SINGLE-UNIT SOLE PLATE under trunnion and drive pinions assures perfect, permanent gear alignment.

Sizes up to 10' x 20', small and large discharge

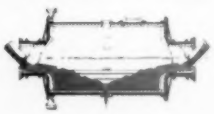
INVESTIGATE OUR LEASE-PURCHASE PLAN



Medium or Large Trunnions with or without Grate Discharge



Direct Feed, End Peripheral Discharge



Direct Twin Feed, Center Peripheral Discharge

NO COST TO YOU FOR THIS SERVICE

Find out the exact size of mill you require, its cost, power requirements, production and screen analysis of manufactured sand. Send ¼ cu. yd. sample of material prepaid to Denver Testing Laboratory, 1755 Blake St., Denver, Colo., for preliminary test. There is no charge to you for this service and the information from this test will help you in your decision.

Let us report to you which method of discharge will do the best job for you.

"The firm that makes its friends happier, healthier and wealthier"

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B.F.Goodrich V belt briefs

TIPS ON THE CARE, MAINTENANCE AND SELECTION OF V BELTS FOR INDUSTRY

The right way to install and run-in V belts

To get the most possible life out of a set of V belts you've got to install them and run them in properly:

To install V belts:

1. Move driver unit toward driven machine so that belts may be placed in sheave grooves by hand.
2. Work belt slack to top side of drive.
3. Move driver unit back into position, eliminating all belt sag.
4. Check sheave alignment.

To run-in V belts:

1. Start unit and operate long enough to permit belts to properly seat in grooves.
2. Stop unit. Adjust centers as necessary until all belts have proper tension.
3. Review adjustment from 24 hours to 48 hours after drive is in operation. This is important, for new belts stretch slightly and seat in grooves before reaching their working lengths.

It pays to keep belts stored properly

V belts should be stored in a cool, clean, dry place. Avoid heat and direct sunlight. Do not hang on nails or other small objects which might cause a sharp bend or tension that would result in a permanent set in V belt. Oldest belts should be used first to keep fresh stock. Matched belts should be banded together so they don't become separated.

BELTS BOIL IN HOT SAND MILL—*The V belts driving this ball mill help grind hot sand, heated to 260°, to a fluffy powder used for fine glass, pottery, cosmetics. Ordinary V belts were lasting one to two years. B.F.Goodrich Grommet belts replaced them, have lasted over five years. Grommet belts stay cooler because they generate less internal heat and are made of a rubber that takes higher temperatures.*

What caused this V belt failure?

Answer: Prematurely worn sides are caused by grit, dirt or any such abrasive contact. Misalignment often causes wear on one side only. To prevent, align the sheaves, checking with straight-edge or cord. Keep belts and sheave grooves clean.

B.F.Goodrich V belt manual

Your B.F.Goodrich distributor has a new maintenance manual that tells you how to get longer life from your V-belt drives. Its 12 illustrated pages contain information on how V belts work, how to select V belts that fit, how to install, how to keep them running, and how to spot trouble.

Take a look inside with this X-ray of a Grommet belt

This model of a B.F.Goodrich Grommet belt was made of a transparent, flexible material so that you can see its grommet construction. The two endless loops you see are grommets, the load-carrying members of the B.F.Goodrich belt. These are made by winding heavy cord on itself to make an endless cord grommet.

In the actual belt, these grommets float in a bed of solid rubber. You can *see* why every part of the belt is equally flexible—there are no stiff plies to resist bending. Most cord failures occur where cords overlap. But in the B.F.Goodrich Grommet belt with endless cord construction this cause of failure is eliminated.

Ask a factory-trained specialist

For help in selecting V belts for any kind of service, call the man who is a specialist in V belts—your B.F.Goodrich distributor. He can help you cut costs by getting longer life from your V belt drives. *B.F.Goodrich Industrial Products Company, Dept. M-537, Akron 18, Ohio.*

B.F.Goodrich V belts

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Enter 1449 on Reader Card

Rock Products

Vol. 62, No. 4

APRIL 1959

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Bill Rigney, Horace C. Stoneham and Carl Hubbell

"Welcome to the newest giant in San Francisco"

says Horace C. Stoneham, President of the San Francisco Giants baseball team

Here's the "big-league" hitter in crushing equipment batting 350 tons an hour, all day long!

The largest portable crushing plant in existence, a Universal 293QS "warms up" to turn out 200,000 tons of aggregate for the San Francisco Giants' new baseball stadium to be completed in 1959.

Not visible, but "pitching" to the giant 293QS plant from the left is another Universal plant, a 'dozer-fed, 3042 primary jaw crusher.

Flanking Horace Stoneham for the "warm-up" at the new stadium site are these well-known Giants, Bill Rigney and Carl Hubbell — always interested in seeing "fast delivery", whether from men or machines.

Under Charles L. Harney, Inc., San Francisco contracting firm, the stadium project will require 150,000 tons of 1½" crusher-run base material and 50,000 tons of ¾" type-"B" plant-mix.

"Our schedule makes this a 'no-time-out' project," says Joseph P. Silvestri, vice-president of the Harney firm, "so we picked the Universal 293QS for its extraordinary capacity and its versatility on the job."

To star in a major club like the San Francisco Giants, a ball player must become an unerring performer. Speed and stamina — plus precision and plenty in reserve — are his characteristics . . . and the ability to do more than one thing, and do it well.

All these are characteristics, too, of the Universal 293QS, a "pennant-winner" among portable crushing plants for the past 20 years.

Offering the most varied line of portable plants on the market, Universal is capable of serving everybody: from 50 tons an hour to 350 or more tons an hour.

So, whether you're in the "minors" or the "majors", give us a whistle. We'll come running out of the dugout — on-the-double — to serve you.

UNIVERSAL 293QS

The equivalent of a stationary plant on wheels, this portable crusher is truly the "giant" of them all!

Three stages of reduction with only two crushers. First stage: jaw crusher. Second and third stages: Universal "TwinDual" rolls.

Exclusive Universal (30") "TwinDual" roll crushers allow up to 100% wider discharge opening of the 2036 Universal jaw. Space and weight savings are achieved by mounting the roughing and finishing rolls of the "TwinDual" unit on two shafts instead of four.

Skid-mounting of the jaw enables the plant to meet highway weight limitations for fast, easy movement.

Convert it from gravel to rock production by substituting an apron feeder for the swivel-feed conveyor and scalping screen ahead of the jaw and you've got the most versatile piece of crushing equipment you can buy.

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at

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SEVENTY-THREE YEARS is a long time! That's how long A. J. Reiske Sons Co. of Milwaukee, Wis. has been in business. That goes back to 1885. A. J. Reiske Sons Co. is one of the original producers of gravel as a business in the State of Wisconsin. They produce Processed Bank Run Gravel to meet Wisconsin State Highway Department specifications.

Here is another case where dependability counts. *Your Northwest is always ready to go. We hear it everywhere and Northwest users will tell you so.*

On jobs like this a shovel has to keep a-runnin' and Northwest dependability has been recognized by the Reiske organization and other pit operators throughout Wisconsin.

Your Northwest is built for the toughest job a shovel has to do—it's a *real* rock shovel—gives you higher output in rock and makes easy digging easier.

Look at that dipper—a heap every time. Smooth control; accurate spotting; jerk-free, grab-free swing and the Northwest Dual Independent Crowd combine to pour out the material. There are no slowdowns or delays in a Northwest's digging cycle and it means more loads at the day's end. There is a lot more to the story. Ask for complete details and let us send you a catalog, on the size machine you need.

Perhaps Rubber Tired Equipment will do your job better. The Northwest Truck Crane brings you a combination of advantages found in no other similar machine. 25 and 35-ton capacity.

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541-14-L

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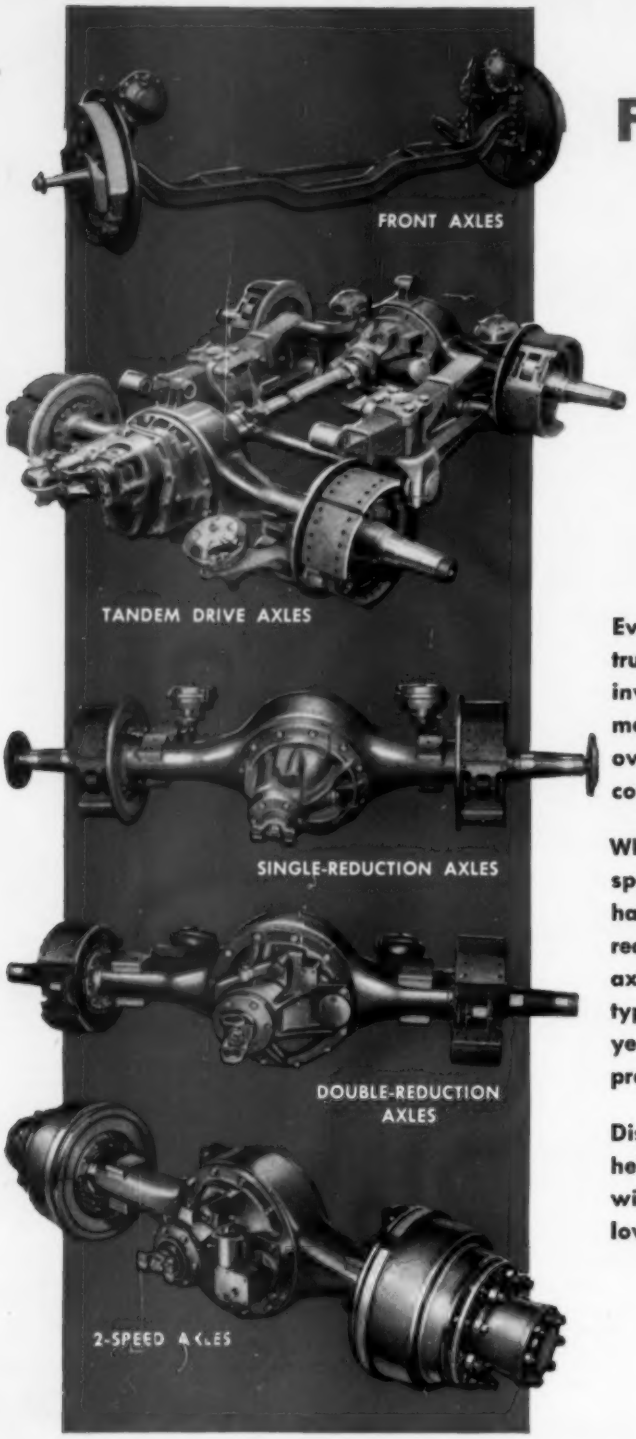

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★

and the RIGHT AXLE on the Truck!

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Every hauler knows how important it is to buy trucks that are RIGHT FOR THE JOB. Dollars invested for ample capacity and the right equipment to handle the job, are paid back many times over—in reduced maintenance, lower operating costs, and longer truck life.

When you buy a truck, it is important that you specify the RIGHT AXLE for the job. Your kind of hauling may call for single reduction, double reduction or 2-speed—and perhaps tandem drive axles. For you there is an Eaton Axle of the right type and in the right size—backed by almost 50 years of axle manufacturing experience, and by proven performance in more than 2-million trucks!

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EATON

EATON AXLE DIVISION MANUFACTURING COMPANY
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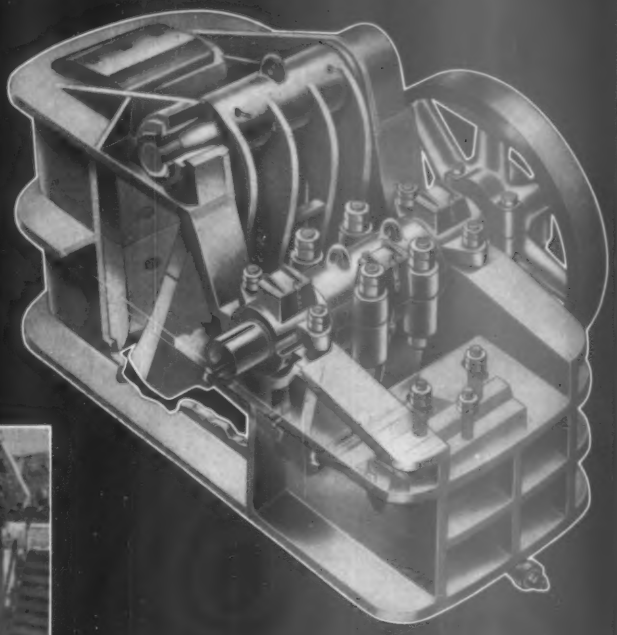
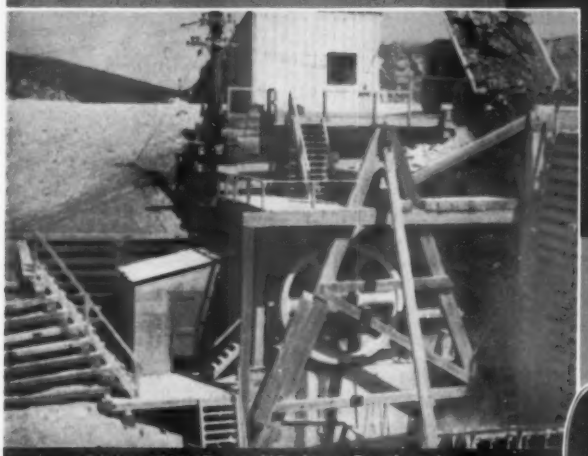
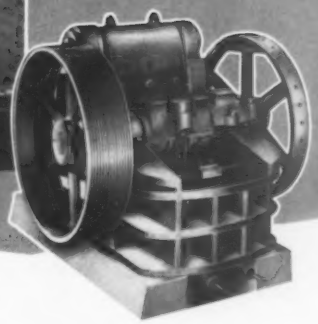
Traylor-made H & HB Jaw Crushers

Cutaway view below shows the advanced design of Traylor type HB Jaw Crusher.





56" x 72" Type HB Jaw Crusher installed in quarry of a steel mill.



One of the many important features of the Traylor HB Jaw Crusher is the Traylor developed curved jaw plates employing the principal of the famous curved setting which have proved so successful in Traylor crushing machinery. The forged steel swing jaw shaft and the patented swing shaft suspension are two more of the features built into Traylor Jaw Crushers. For more information, write for Traylor Bulletin No. 5105.

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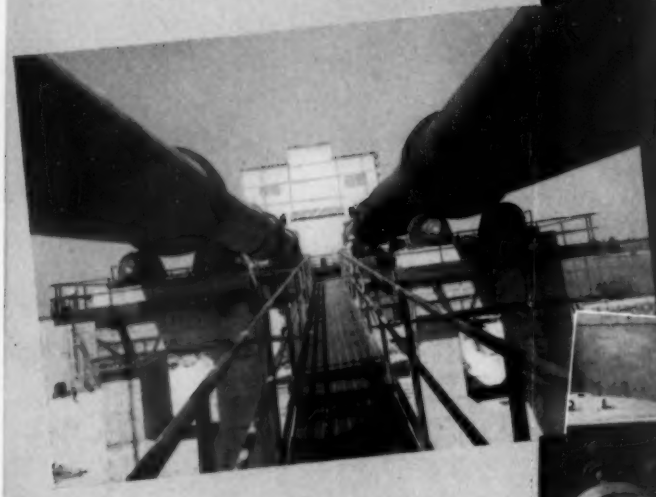

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What's Happening

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

April, 1959

New construction activity set an all-time high for the January-February period, reports the U. S. Departments of Labor and Commerce. The $3.5 billion total of work put in place during February was 12 percent above the previous February record set in 1958, and expenditures for the first two months totaled more than $7.1 billion. Private spending for new construction, a record $5.1 billion in the two-month period, was up 9 percent over 1958. Outlays for new dwelling units accounted for the increase, offsetting a decline in spending for industrial plants. Public construction expenditures, at $2 billion, were 16 percent above 1958 and at a new high for the period. Highways and housing stimulated the gain.

Liquid fuels from coal will be the objective of a long-range joint research project of Standard Oil Co. (Ohio) and Consolidation Coal Co. Researchers on the new project will be able to draw upon each other's experience in coal and petroleum to develop techniques and processes for making liquid hydrocarbon compounds from carbon solids. Officials of the two companies estimate that between 5 and 10 years of investigation will be necessary before commercially practical results can be expected. Meanwhile, the Bureau of Mines is working on a process for gasifying lignite, a virtually untapped, practically inexhaustible natural resource. Steam and oxygen under great pressure will yield ammonia, methanol, and both liquid and gaseous hydrocarbons; waste will be exhausted as a liquid slurry.

Cars and trucks of the future may be guided entirely by electronic control systems. Already, General Motors has demonstrated an experimental system for passenger cars at its Technical Center near Detroit. An electronic control mounted in the glove compartment of the car senses a magnetic field in a wire laid down in a predetermined path and actuates the steering mechanism to follow the wire.

Reinforced concrete will be used to enclose radioactive wastes for disposal in the deeps of the Gulf of Mexico, subject to approval by the Atomic Energy Commission. A Houston company, Industrial Waste Disposal Corp., has requested a license to package up to 10 curies of the lethal waste materials in concrete block before shipping them out into the Gulf to be dropped overboard into 6,000 ft. of water.

Lightweight insulation which may be particularly effective for space travel is the result of a process for making fibrous potassium titanate developed by the Du Pont Co. The small filaments in a mass of this material are said to effectively block the penetration of infra-red rays, giving about twice as much heat-insulating effect in the 1,500 to 2,000 deg. F. range as any other known insulating material.

From Holland comes an unusual approach to concrete technology. In and near Dutch army camps, ordinary roads were crushed by tanks and other tracked vehicles. J. C. A. Langendam, a Dutch army engineer assigned to study the problem, came up with this solution: A mixture of cement, water and ⅛-in. lava aggregate is lightly vibrated, cast in 1 ft. x 1 ft. x 2 in. slabs and cured. After 28 days, the still-wet slabs are placed in a vacuum tank and heated to 100 deg. C. The air is evacuated, surface water disappearing with it. Then the slabs are impregnated with pure, hot asphalt. Water remains in the pores of the lava aggregate, aiding in further curing of the cement inside the asphalt. The foundation for the road is prepared in a normal way and finished with a thin layer of cold asphalt, on which the slabs of "bituminous-homogeneous" concrete are placed. The joints of the slabs are filled with pure fluxed asphalt by spraying the entire surface and covering it with a finer size of the same aggregate that is used in the slabs. A test section of road prepared in this manner has been in use for three years in a busy army camp and is still like new.

Photographs of rock through muddy water in a diamond drill boring have been obtained by the British. These photographs provide invaluable aid in assessing the condition of rock in which, due to fissuring, weathering or friability, core recovery is poor. Equipment for producing these photographs was developed by England's Wimpey Central Laboratory and is now available for general use. Apart from photographs of rock conditions in diamond drill holes, the equipment can be used for other underground photography, such as the all-round examination of cavities and abandoned mines met during boring.

Refractory material can now be sprayed directly onto surfaces requiring a high degree of protection against extremes of heat and corrosion, such as the nose cones or surfaces of missiles and rockets. Finely divided cermets, oxides or pure metals are fed into the 15,000 to 30,000 deg. F. temperature generated in a high intensity electric arc. The vaporized materials are then directed at the objects to be covered. Linde Co., developer of the "plasma" process, claims that there is no oxidization of the coating compounds, that materials of very high melting point can be sprayed and that the finished deposit has good bond to the base with high density and low porosity.

Machinery and structural members are seated more securely in a nonshrinking grouting material introduced by Walter Maguire Co., Inc. Feature of this new grout is the use of a special aggregate, Cortland emery, a form of corundum. Named "Emeri-Grout," the new material expands slightly as it sets. Its firm grip is further assured by its plasticity before setting.

The lowly honeybee has inspired engineers and architects to develop a building material of radically different design. While the hexagonal cell has been known for centuries, its advantages as a construction material—high strength, insulating value, light weight and fire-resistance—have only been appreciated in recent years. It is expected that it will eventually become a standard type of construction material. While its widespread use will certainly be resisted by labor unions and by obstructive local building costs, the exceptional properties have already established honeycomb construction for applications where it is the only feasible material—mostly military and aviation projects.

The editors

Wide Range of Products with TELSMITH Equipment

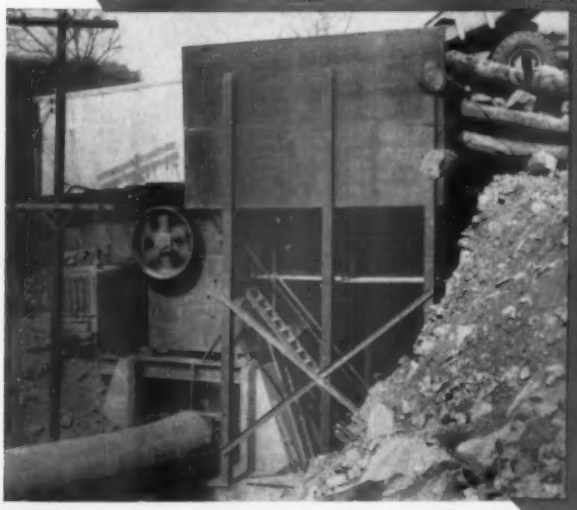
Lambert Bros.-Ralph E. Mills & Gorman, Inc. flexible crushed stone plant, Morgantown, W. Va., is producing 450-500 tons per hour of the following sizes —

for the U. S. Corps of Engineers' Sutton Dam and Hildebrand Dam: 6" x 3"; 3" x 1½"; 1½" x ¾"; ¾" x 4 mesh; and minus 4 mesh sand.

... in addition, a variety of sizes for black top plants, ready-mix concrete plants, building block plants, agricultural lime, and mine dust.

Plant was designed by Rish Equipment Company, Telsmith Distributor, Roanoke, Va., under supervision of Mr. W. S. Russell, Vice Pres.

Telsmith Equipment in this plant is listed below. Send for Bulletin 266.



▲ Telsmith 48-FC Gyrasphere Secondary Crusher

◀ Telsmith 42 x 48 Jaw Crusher and one of two Telsmith 48" Heavy Duty Apron Feeders

▼ General view of plant which has six 5' x 12' Telsmith Vibro-King Screens

Q-37

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129

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EDITOR'S PAGE

George C. Lindsay, Editor

Time of decision

THE LABOR SEGMENT OF OUR NATIONAL ECONOMY continues to get the political nod. So much, in fact, that our new Congress has been tagged as representing the "special interest" concept. That's not good, and something must be done about it.

History shows that economic chaos usually follows periods when a certain group—no matter what group—has been favored in national legislation and interpretation of law. At those times, our form of government has been in jeopardy. Looks like we've reached that point again.

What brought it about? John F. Lane, general counsel for the National Crushed Stone Association, gave his view at the recent NCSA convention in Florida. Unions have (1) highly effective organizations, (2) masses of available political workers, (3) intelligently conceived programs, and (4) more than lots of money. For more than 15 years union leaders have used these to influence the election of Congressmen and Senators who favored "labor" over other segments of the economy. Today, Mr. Lane said, each house of Congress has more than a majority of "pro-labor" members, according to a survey of Congressional Quarterly.

These members can vote through any labor legislation they demand and most that they wish, if they choose to pay homage to those who helped to elect them. Moreover, we hear that legislative matters of the big unions are controlled by a handful of big-union leaders. It is silly to assume they don't let the boys on the "hill" know what they want.

The horrible possibility under this set of circumstances is a working control of Congress by a small clique dedicated to increasing the power of unions and union leaders. Fantastic, you say? Not so much. Through their leaders, unions already have made evident a "ruthless, uncompromising, naked show of power," as V. P. Ahearn, National Sand and Gravel Association, puts it. They're not likely to give it up easily.

We must start the pendulum of opinion to swing back toward normalcy. How? We can't prohibit union political activities by legislation; labor has the same right to be heard as business and other groups. But we can begin to create a great public awakening to what has happened.

We must educate; particularly, we must inform the laboring man himself—your employe. As a union man, he perhaps suffers the inequities and abuses of union-leader power more than others. Through education, we must rely on public opinion to see that politicians on either side of the aisle are not agents of labor—or of any other special segment of the economy.

Lose no time in starting your own program of education. The time of decision is now.

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Full 9,000 lb. carry capacity and 21,000 lb. breakout force

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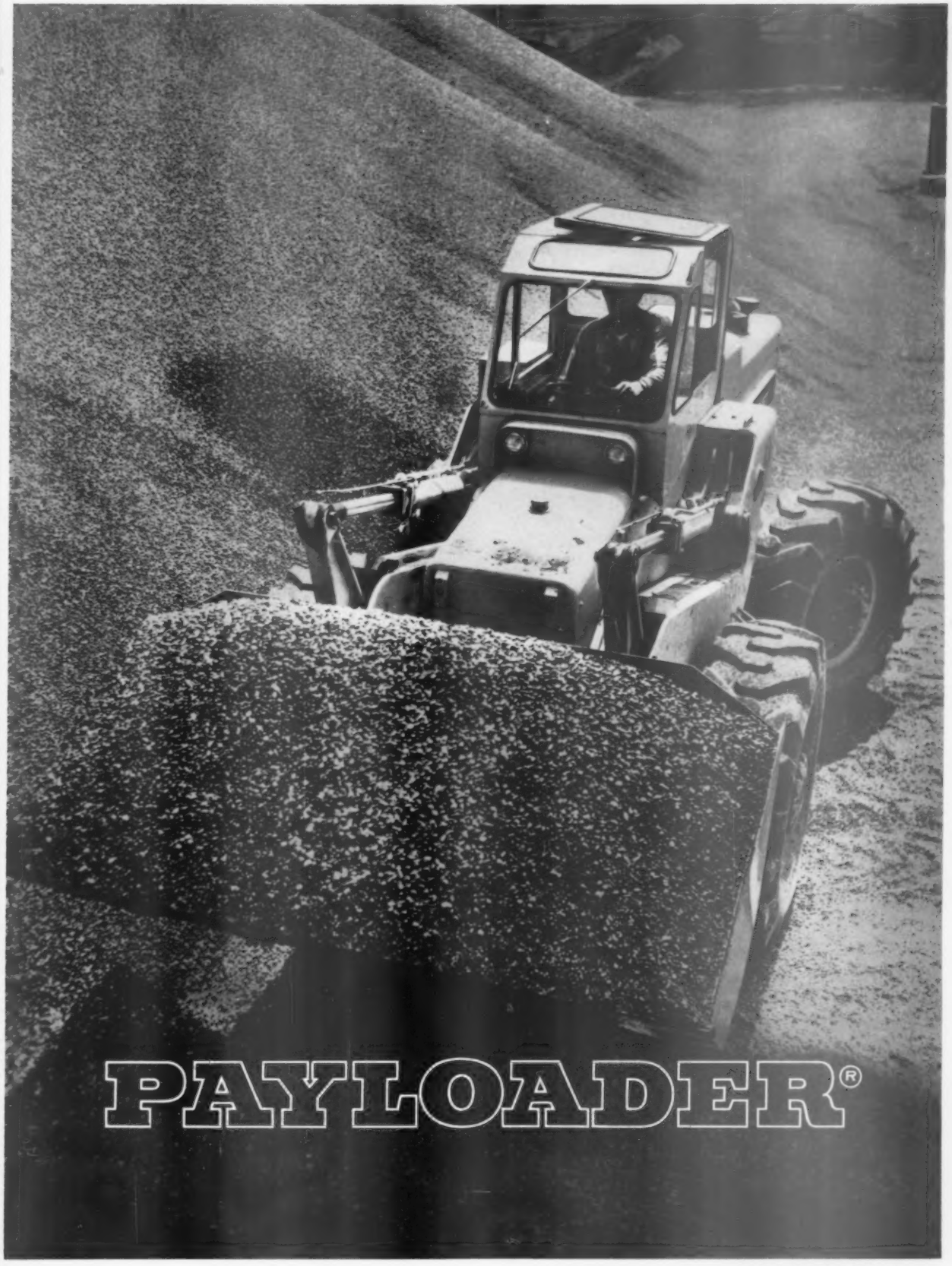

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ROCKY'S NOTES

NATHAN C. ROCKWOOD

The Japanese kind of cement research

THERE HAS RECENTLY COME TO HAND an interesting small volume entitled "Review of the Eleventh General Meeting of the Japan Cement Engineering Association." From the Foreword it appears that this organization succeeded, on September 1, 1946, the former Japanese Portland Cement Engineers' Association and the Cement Control Association. The present organization is composed of 18 cement manufacturers operating a total of 42 cement factories. Its announced purpose is "furthering the progress of cement and concrete manufacturing technique and giving impetus to the rational usage of cement."

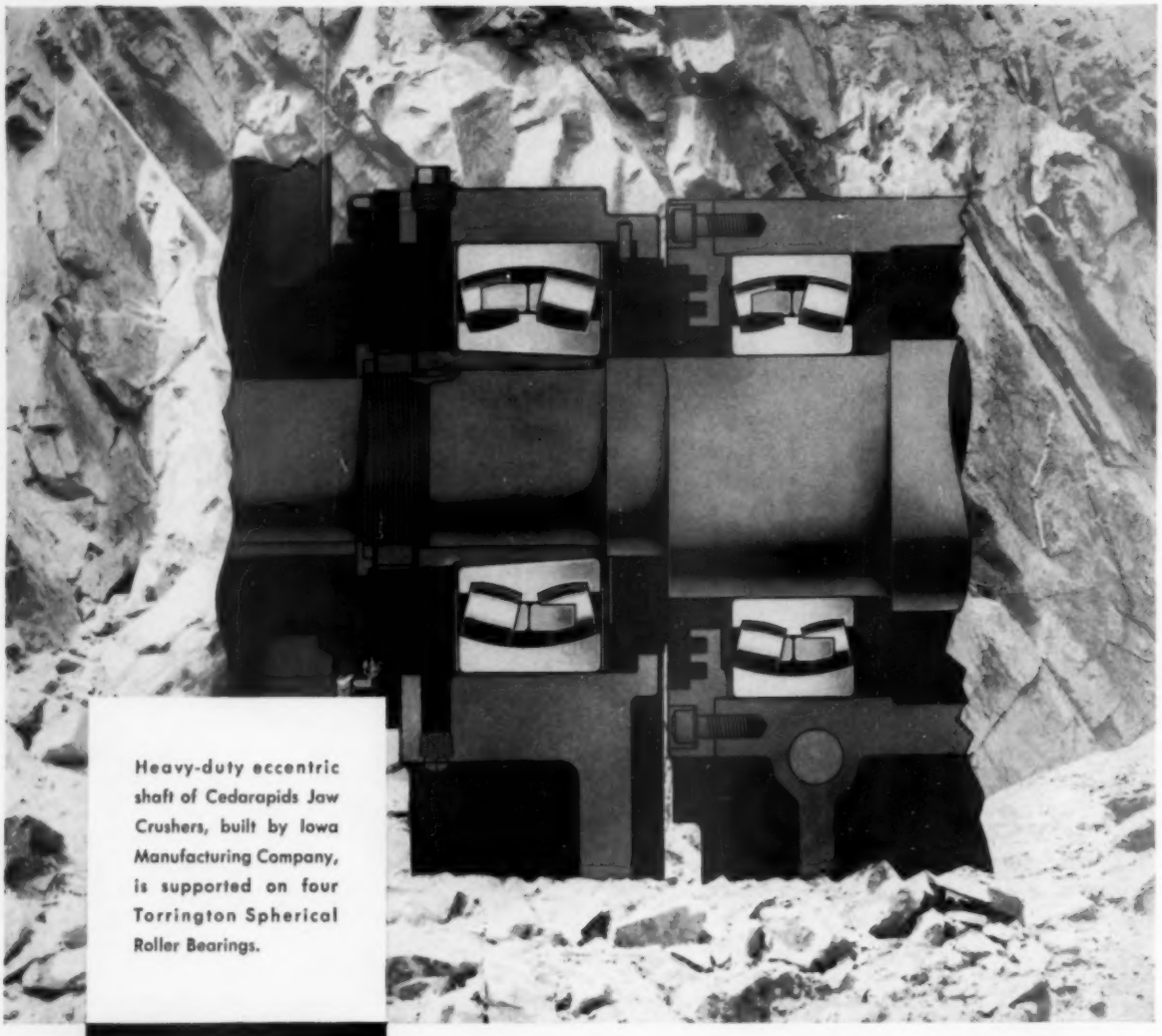
These objectives are accomplished by (1) the holding of annual conventions of cement chemists, engineers and consumers, sponsoring of related lecture meetings, etc.; (2) research on cement and concrete; (3) guidance of cement and concrete engineering; (4) operating of testing laboratory on cement and concrete; (5) publications. It appears that the organization is a kind of cross between our Portland Cement Association and the American Concrete Institute. It is organized and officered (presumably financed) by cement manufacturers, but all interested, technically, in cement and concrete apparently take part in the proceedings. We think this is an admirable setup for real and true progress in such an art and profession as the manufacture and the engineering use of cement and concrete.

The meetings, the Proceedings of which are reported in this volume, were held in Tokyo, May 14 to 17, 1957. These sessions began at 8:30 a.m., and lasted until 5 p.m.—ample evidence of the seriousness and purpose. They were attended by 517 persons from all over Japan. Of these 342 were representatives of the cement industry and 175 were "general observers." The proceedings included reports on the findings of 11 committees and 2 subcommittees and 78 papers on the different research and studies made by engineers [including chemists], which are abstracted in the volume before us.

Some contrasts. We are fully aware that "comparisons are odious," yet they are often interesting and sometimes instructive. Hence, before we review the Proceedings of the Japan Cement Engineering Association, we hazard a few comparisons, or rather contrasts, with its counterpart in this country. Our Portland Cement Association is obviously organized and maintained by the cement industry for the same objectives. However, the PCA is a very exclusive association. Even its meeting dates are kept secret, so far as possible. No one not an executive of a member company or association staff member attends its meetings, except on very rare occasions. The research activities of the PCA are apparently conducted on a similar plane. Only results of such work as may reflect credit, or helpful publicity, on the product are apparently ever released to the consumer public. It is possible that even the members themselves refuse to approve or listen to results of research which might be unfavorable to the product as presently manufactured.

We have always had the impression (it may be erroneous, but others have it too) that the PCA does not encourage independent research and study, even by its own member companies. Hence, the question naturally arises as to whether or not the company executives really want to know the whole truth and nothing but the truth about their product. If that is the case, it is obvious that any research conducted in such an environment may lack something really vital to any honest research program, which necessarily seeks truth first, last and always. It is hardly necessary to give examples, because we are sure most of our readers know of instances which provide some basis for such an inference.

Please turn to page 142



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Torrington Spherical Roller Bearings also are used in Cedarapids roll crushers, hammermills and impact breakers—and in many other construction equipment applications. For your toughest jobs, rely on Torrington Bearings and Torrington engineering experience. **The Torrington Company, South Bend 21, Ind. and Torrington, Conn.**

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Washington Letter

Edgar Poe

More spending, More taxes President Eisenhower has stepped up his press conferences. He is conducting more conferences, and is using them in an effort to get a message over to the people of the United States. The Chief Executive apparently is going to reiterate on special occasions that Congress, controlled by the Democrats, will be asked to raise taxes if the legislators insist on spending more funds than the treasury is taking in. Some Democrats are maintaining that the people voted for more spending in 1958 when they gave the Democrats such a smashing majority over their Republican rivals.

Billion dollar Increase in Defense costs Unless a shooting war develops, spending by the Department of Defense will move up gradually rather than in a sharp spurt. Comptroller Wilfred J. McNeil of the department predicts that defense spending will move ahead approximately $1 billion a year in the absence of armed conflict. Military missiles and space activities seem destined to hold the spotlight for several years.

Big construction Program set A tremendous amount of concrete, steel, sand and gravel is going to be consumed in many major projects under construction or proposed by the Bureau of Reclamation. About 175 projects with a total face value of $350 million are now in progress, and others have been blueprinted. Included are 14 storage dams, a diversion dam, 2 powerplants, 19 pumping plants, 100 miles of main canal and 200 miles of laterals and pipelines. Contracts are also being let on five storage dams, all earth-fill structures. These are the Merritt and Sherman dams in Nebraska, Stanaker in Utah, Prosser Creek in Nevada and Gray Reef on Wyoming's North Platte River.

Alaska road May be paved Bills are pending in Congress that would provide for the paving of the 1,200 miles of the Alaskan Highway. The measures call for United States-Canadian planning. Under the terms the United States would pay half the paving costs, and United States motorists would be able to use the highway toll- and tax-free. In addition the Canadian government would be responsible for maintenance of the highway on a year-round basis. Thus far only 300 miles of the highway within Alaska are paved. All 1,200 miles of the highway within Canada are surfaced with gravel.

Bomb shelter Interest up Substantial reductions in the government's $100,000,000-a-year civil defense program were threatened until the Berlin crisis cropped up. There is no doubt that the public has had a strictly lackadaisical attitude toward the construction of concrete and steel bomb shelters, but the Berlin situation spurred some renewed planning and construction activity. Congress was told that it has been difficult in the past to urge heads of families to build bomb shelters and stockpile food while at the same time they are told the cold war could last another 25 or 30 years.

Self-employed Tax relief? Self-employed persons like those in the rock products field stand a fair chance of getting some tax relief before Congress adjourns the 1959 session, unless the grave international situation worsens. The proposal would cost the treasury $365 million in revenues. Under its provisions self-employed persons, like rock quarry owners or contractors, would defer tax payments until the age of 65 on 10 percent of their earnings, which they voluntarily devote to a retirement nest egg. A $2,500 annual tax deferral would be allowed. Representative Eugene J. Keogh of New York, member of the House Ways and Means Committee and longtime sponsor of the proposal, expresses confidence the measure will be headed for the White House later this year.

Interstate Road funds Running out

With the Highway Trust Funds running out of money for the vast interstate highway program, Congress is wrestling with ways and means to find revenues to keep the program on schedule. The legislators turned thumbs down on President Eisenhower's recommendation to increase the federal gasoline tax by 1½ cents a gallon. Several states have increased or propose to increase the state tax on motor fuel and appealed to their congressmen to prevent an additional federal increase.

Nevertheless, Congress is unlikely to let the mighty 41,000-mile program bog down or even be extended beyond the original completion date. As it now stands, Congress is going to have to raise from $13 to $15 billion more than the present earmarked tax is yielding to complete the interstate program by 1972. As things stand now, the trust funds will be in the red by $923 million by 1960, and the deficiency would amount to at least $5 billion, and probably more. by 1960.

Primary and Secondary roads Are unaffected

Testifying before the Senate Public Roads Subcommittee, Federal Highway Administrator Bertram D. Tallamy said the interstate program has made excellent progress thus far. He said improvements meeting interstate standards have been completed on 4,831 miles of highway or 12 percent of the system. Despite the present rate of progress, Mr. Tallamy contends that the nation is "not doing much more than holding our own" in the rate of road construction, with an ever increasing number of automobiles and trucks coming onto the streets and highways of the country. The primary and secondary road programs have priority of funds. Therefore they are unaffected.

Sand and gravel Should retain Tax allowance

The National Sand and Gravel Association is prepared to make a powerful defense before Congress of the existing five percent depletion allowance for sand and gravel, should an attack on the provision in the existing tax law be made at this session. There was no indication that an assault will be made on the allowance, but veteran Capitol Hill observers said the situation could change quickly. Vincent P. Ahearn, executive secretary of the NSGA, declares that the industry can show that the depletion allowance for sand and gravel serves the public interest and should be retained. He adds: "Indeed, a case can be made for a larger percentage depletion allowance for sand and gravel, and at the right time, the committee on taxation for the association will be prepared to make that recommendation."

Treasury backs Cement, brick Tax law changes

The fate of the Treasury Department's recommended depletion allowance, involving the cement and brick industries, is undetermined. Treasury Secretary Anderson, appearing before the House Ways and Means Committee in 1958, advocated amendments designed to overcome federal court rulings pertaining to the so-called depletion allowances cut-off point of the industries. No action was taken, however. Nevertheless, President Eisenhower referred to it in his budget message to Congress.

The treasury amendment would specify that the treatment process for cement and brick shall be considered mining for the purpose of computing percentage depletion. The treasury officials maintain that the amendment would prevent what they call "an unintended extension of percentage depletion allowances" to the sale prices of finished products. The National Sand and Gravel Association says there is cause for uneasiness in the recommendation of the administration. The proposal is pending before the House Ways and Means Committee at present.

Bureau reports 19-year asphalt Pavement study

The Bureau of Public Roads recently published an article in its journal of research telling of the progressive alterations in a sheet of asphalt pavement during a 19-year study. The asphalt was constructed on Connecticut Avenue, one of the leading thoroughfares of the nation's capital.

The article was jointly by-lined by Jarl T. Pauls, chief of the bituminous branch, and Woodrow J. Halstead, head of the bureau's bituminous materials section. The tests showed that a substantial portion of the hardening of the asphalt generally occurs during the mixing and rolling of the pavement. The foreword to the 12-page article, marked with tables and many statistics, said the over-all age-hardening in the pavement did not appear to be directly related to the type of asphalt used. In the later years of the study greatly increased traffic, together with the hardening of the asphalt, resulted in the loss of a significant amount of the surface material. END

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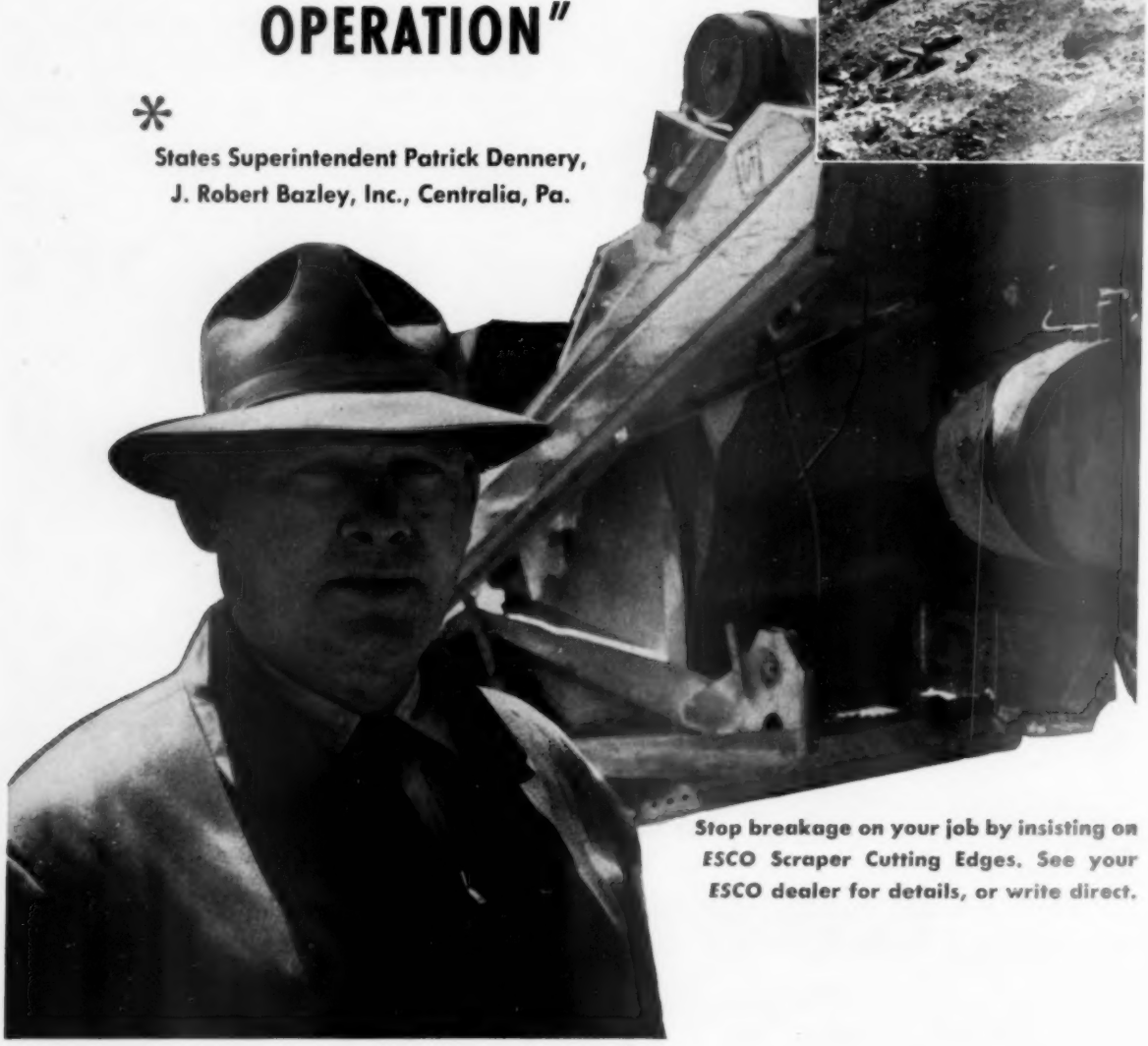

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"We have to fight for every inch of soil we remove", explains Dennery, superintendent on the J. Robert Bazley, Inc., open pit coal mine at Centralia, Pennsylvania. "And cutting edge breakage seriously affects the efficiency of our operation. The scraper cutting edges we were using previously were prone to breakage. Gashes up to 4" deep would occur. But *ESCO* blades, which we have been using exclusively for over three years, have never shown the least sign of chipping.

"Furthermore", continues Dennery, "*ESCO* scraper cutting edges give us longer service than our previous blades. The task of reversing or replacing blades is definitely made easier by *ESCO*'s two-section design of the center blade." Concludes Dennery, "*ESCO* Scraper Cutting Edges give us the low down-time insurance that is imperative on our operation."

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How would you decide?

A round-up of actual day-to-day in-plant problems and how they were handled by management men

Can an employe initiate arbitration proceedings?

What Happened: Jack Kitnor had a beef against his supervisor and went to his union. "I want you to file a grievance," he demanded.

"Okay, Jack. We will. We don't think you have much chance of winning, but we'll try."

The grievance went up to step three

and management backed up its supervisor's stand.

Kitnor insisted that the union proceed to arbitration. "We won't do it, Jack. The company is right and we'd only get licked at arbitration."

"Listen," Jack retorted. "I pay my dues and you must go to arbitration. That's your job. If you don't, I'll go to court and force the company to arbitrate with me."

Was Jack:
Right? ☐ **Wrong?** ☐

What The New York Supreme Court ruled: "There is no contract provision which confers on a union member the right to initiate an arbitration proceeding—and the union persuasively argues that the situation would become completely chaotic if each member of the union involved in a grievance complaint (of which there are thousands every year) could compel arbitration at the union's expense and contrary to the union's best judgment and wishes in the matter.

"Actually the union has shown that it has a very good reason for not proceeding to arbitration in this case, viz., that in a very similar case, which it finds is indistinguishable from petitioner's case, in which it did go to arbitration, it has recently received an adverse decision. Application denied."

Each incident given in this department is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to *Rock Products*.

Can you penalize an employe who insults the boss at a party?

What Happened: Every year the company ran a great Christmas party—plenty of good food and plenty of free beer. The party took place in a company picnic ground, and all the supervisors, as well as top brass, attended and had a gay time. During the party, foreman Jenks was standing near the beer bar when Bill X came over. Bill had a can of beer in his hand. He started to talk to the foreman about a grievance he had a few days earlier, and which was turned down.

"This is no place to beef about your job," Jenks said.

"This place is as good as any. Now you listen to me," Bill retorted, his face flushing, his diction slurring.

When Jenks turned to leave, the worker threw the contents of the beer can into the foreman's face. Two workers came over and dragged Bill away.

An hour later he returned, staggering. He continued to berate the foreman until his wife came and led him to their car. The next day Bill got a 30-day layoff. Both sides agreed to skip the grievance procedure and take the case to arbitration. The company said:

1. Bill used the party to circumvent the regular grievance machinery and press his complaint at the wrong time and place.
2. This took place on company property so we have a right to discipline him.
3. We live in a small town, and if management is insulted in public, it will be difficult to retain respect and authority.

Bill came back:

1. I was drunk and am willing to apologize.
2. My behavior was off plant premises and is outside the regular discipline channels.
3. I've never had a discipline penalty against me before, and I've been with the company for 15 years.

Was Bill:
Right? ☐ **Wrong?** ☐

What Arbitrator Fleming ruled: "I am inclined to believe that the offense in this case is not really the kind of off-the-job conduct which can be said to be detrimental to the proper functioning of the plant, and within the plant system of discipline. One must remember that this was a social occasion on which efforts have been made to minimize the distinction between production and management personnel. The company furnished free and unlimited liquor for this party. To a certain extent, when a company makes the decision to provide free and unlimited liquor on this kind of occasion, it runs a risk. The company was not justified in imposing a 30-day disciplinary layoff on Bill X. The employe is to be paid for the time he lost as a result of the improper layoff."

(Continued on page 30)

Enter 1519 on Reader Card

New Allis-Chalmers Diesels...

We Told You They Were Good, BUT THEY'RE BETTER THAN WE SAID!

21000 — **340 hp** Turbocharged

6 cylinders

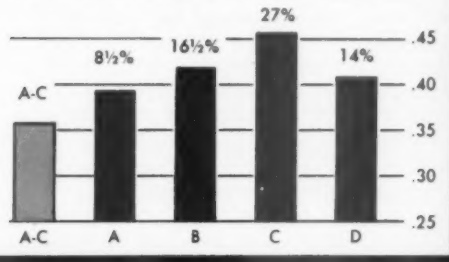
16000 — **230 hp**

Actual field performance now proves that the new Allis-Chalmers 21000 and 16000 are *even better* than we announced. This fuel consumption chart illustrates the big advantage they give you in economy and efficiency, but it doesn't say enough.

FUEL CONSUMPTION

Pounds per brake hp hr.

Percent of fuel savings with A-C over other diesels



Every day, reports from users prove that our original claims were understatements. Here are a few examples:

"Man, what Power — a lot more than we ever expected," reports a construction company spokesman. "These engines have really got it!"

"'Startingest' engine we've ever had," says a northern cement producer. "We threw away the ether can with temperatures way down below freezing — no external heating either."

"We can hardly believe the fuel economy, and it's doing heavy work, too," states a contractor. "Cleanest running engine we've ever seen."

"Wish we had this engine in all our equipment," says a midwestern user. "We're doing a good 25 percent more work with it — on the same amount of fuel. It's almost unbelievable!"

Greater economy, top usable power, superior starting, plus a cleaner, tougher, more serviceable design — these will put more profit in performance *on your job.*

Power *your* equipment with these new engines.

For full details, see your dealer or write for bulletin BU-540. Allis-Chalmers, Milwaukee 1, Wisconsin.

BE-14

ALLIS-CHALMERS

***POWER* FOR A GROWING WORLD**

Labor Relations *continued from page 28*

If an employe is laid off for half a day, can he claim seniority on an "hour by hour" basis?

What Happened: At 12 o'clock Harris and Lang finished a job and asked their foreman for an assignment. "I'm afraid I don't have anything else for you fellows for today. You better punch out now and come back in the morning. I'll have plenty of work then," he said.

When pay day came around, the two men claimed pay for the hours they were laid off because less-service men were kept working. The company seniority policy read: "When operations are reduced, work shall be distributed in each department according to length of service and capability of performing such work." The company maintained that this policy was applicable when a layoff was made for a day or more, saying, "It is unreasonable to maintain seniority on an hour-by-hour basis. It was impractical to take the junior men off and assign Harris and Lang for a couple of hours."

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Duff ruled: "Whenever a Labor Agreement has been reduced to writing, it cannot be varied, altered or contradicted by testimony indicating that one of the parties intended a meaning different than the written language sets forth. The language is clear and unambiguous—when LESS THAN THE FULL NUMBER OF EMPLOYES IS REQUIRED in any department, two criteria will determine who shall be assigned: (1) length of service, and (2) capability of performing such work. The company argues that this provision is applicable only when an employe is furloughed for a day or more, and that nothing therein can be construed as providing for 'hour to hour' seniority. The contract doesn't say that. The language clearly vests seniority rights in all employes who have accumulated sufficient length of service, and who are capable of performing the work. The grievants qualify and therefore should have been given the work. They are awarded pay for those hours."

Can an employe's "attitude" be used to deny him a promotion?

What Happened: When a vacancy occurred, John Derio and Charles Bailey filed for promotion. Bailey, the junior man, got the job.

Derio complained. He pointed to the company's promotion policy which said: "In decreasing, increasing or making replacements in the working forces, seniority, ability and the qualifications of an employe will be given consideration."

"I have seniority," Derio said, "and I have the ability. I have never received a warning for poor work—or anything else, for that matter."

The company based its decision on the following:

1. In the past, Derio has shown a "bad attitude" and "lack of cooperation." He had several run-ins with his foreman who said Derio argued and didn't follow instructions easily.
2. The promoted job requires less supervision and more responsibility. Derio is good when closely supervised but he's not qualified for a higher job.
3. How else can we build up a real team if we don't take "attitude" and "cooperation" into consideration in our promotions?

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Willcox ruled: "It is in the field of promotions that a management stands most firmly for its right to pick and choose the one who it thinks will do the best work. Only in this way can a management build the most efficient staff possible from the human material available. Management asserts that it must have freedom to make its own mistakes, and it must use its own judgment in trying to distinguish between a troublemaker who might be dangerous with more responsibility and a constructive rebel. Much was made at the hearing that 'ability' and 'qualifications' do not include a worker's attitude toward the job or his spirit of cooperation with management. This seems to me insupportable, at least for the word 'qualifications.' Webster's New International Dictionary gives as a definition of qualification: 'that which qualifies; any natural endowment or any acquirement which fits a person for a place, office, or employment.' Derio is not entitled to the promotion."

Can an employe refuse to work with a new man?

What Happened: Downey was a crane operator. A new employe was assigned as his assistant. After a few hours Downey came to his foreman and said: "I'm not working with that new guy. He hasn't enough experience. He doesn't even know the signals and might hurt somebody."

The foreman replied: "I know that, but he'll catch on. Go back and help him."

"I'm not going to do it," Downey insisted. "It's an unsafe condition. Someone might get hurt."

"*You* can't get hurt if you're in the cab," was the foreman's answer.

"All right, I can't get hurt, but somebody else can," Downey argued. But the foreman came back with, "That's none of your business. Get back in the cab."

Downey refused, and went home. He got a week's layoff. At arbitration the company claimed that:

1. We agree that an employe shouldn't work if the job exposes him to injury, but in this case Downey was in no danger.
2. It's the foreman's job to determine safety conditions. Downey had no right to leave on the basis of his own opinion.

Was the company:
Right? ☐ **Wrong?** ☐

What Arbitrator Kelliher ruled: "Downey's layoff was unfair. If a worker honestly feels that a job is unsafe—for himself or his colleagues — he should not be forced to work. Downey should be paid for the time lost."

END

Bigger Equipment

Fast, powerful 6-yd. dragline reaches way out for a heaped bucket.

...The answer to higher production at lower net cost

The trend among producers everywhere has been a steady move to the use of bigger equipment in quarries and plants. Because the larger machines can work faster and produce more with reduced labor requirements, the cost per ton produced is substantially lower. Greater productivity cancels out the higher initial investment in a surprisingly short time.

Shovel prime producer. In the sand and gravel and crushed stone industries, the power shovel remains, today more than ever before, the primary producer. Your production rate depends upon it and unit costs will usually vary inversely with the hourly output of the shovel. As the shovel capacity grows larger, labor costs remain practically the same. After all, it takes the same operator to run a 5-yd. machine or a 1-yd. rig. Without increasing the labor cost, substantially greater tonnage can be moved. Generally speaking, the most modern and successful operators in this business today have discovered that in the long run, the most economical equipment is big equipment.

Big 3-yd. shovel has stamina to keep digging rock without letup.

Longer working life. In rock or stone, nothing beats the trouble-free digging and loading ability of a big, rugged shovel in a 3-yd. or larger capacity. Powerful, fast shovels are built to take the rough punishment of rock digging for years on end without expensive breakdowns. Units built by the Manitowoc Engineering Corp., for instance, illustrate how the manufacturer *engineers* every component of his machine to meet the rigors of pit and quarry work. Manitowocs have reinforced, alloy steel dipper sticks; huge, heavy carbodies; extra-stable, wide-spread crawlers; powerful, independent chain crowds with a high speed retract; 3-stage torque converter power applications; simple design with "Power-Flo" drive using a minimum number of gears; long-life, alloy steel utilized at every point of greatest wear; and many other long-lasting parts to insure steady production with the least amount of attention and service.

Get ready now to meet the stepped-up demands for cement and stone. Increase your pit output and raise your profit margin by switching to larger equipment soon. Modern, big-capacity excavators will give you a better chance to make a fair profit in the busy, highly competitive days ahead. To beat the competition, you'll want a hard-digging Manitowoc with the power, speed and reach to put you way ahead. Your Manitowoc distributor is the man to see . . . now! And ask him for a copy of the helpful, informative folder, "Manitowoc for more Profitable Production" . . . it contains details you'll want to know about the full line of Manitowoc units, ranging from 1-yd. to 5½-yd. in capacity. Manitowoc Engineering Corp., Manitowoc, Wisconsin. (A subsidiary of The Manitowoc Company, Inc.).

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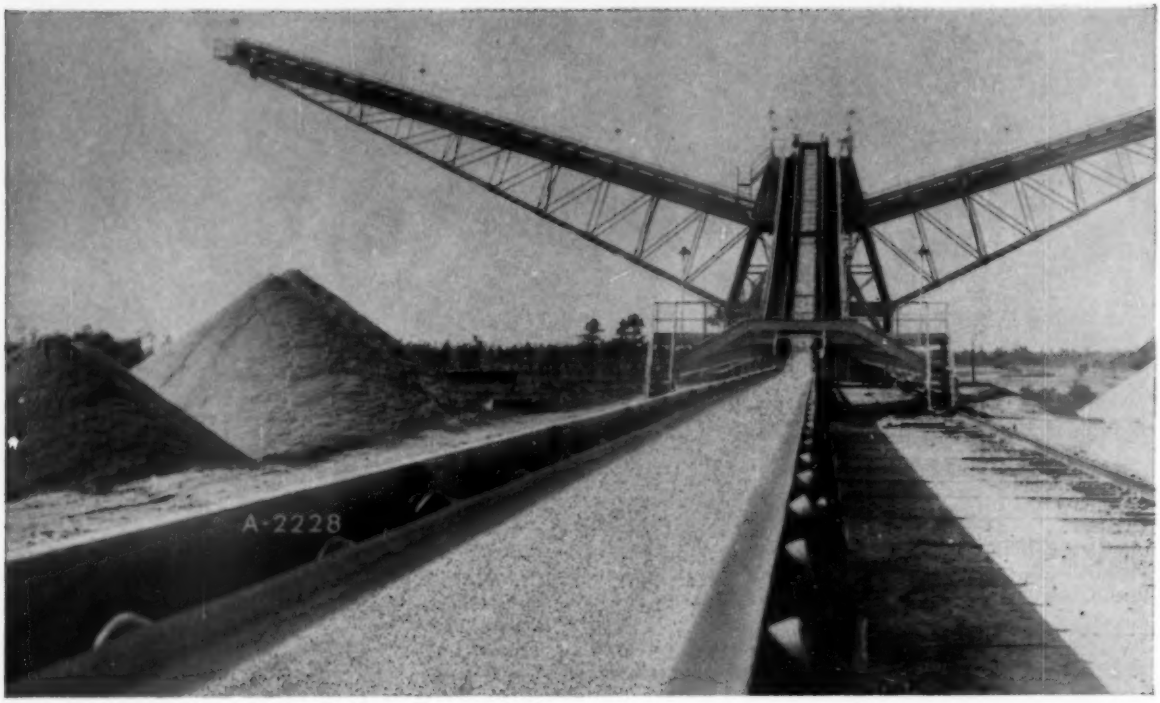
STEPHENS-ADAMSON



BELT CONVEYOR SYSTEMS...lower handling costs!

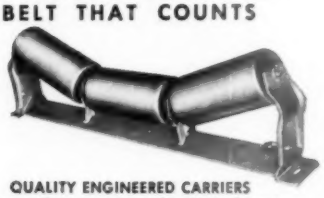
Nearly a half-century ago STEPHENS-ADAMSON engineered its first sand and gravel conveying system. Today, that system is not only performing efficiently but the company is a loyal S-A customer.

Since that first system was installed STEPHENS-ADAMSON engineers have engineered and built innumerable rock products handling systems — each calling for certain innovations, because as you know — every operator's handling problem is a little different. The final result with each new S-A installation is the same however . . . bulk materials are handled at the lowest cost per ton.

Profitable conveying of bulk materials over the belt is dependent on what's under the belt in quality-engineered conveyor components. S-A conveyor components contain features — (many of them patented) — found in no other conveyors on the market.

Write for bulletins 355 & 558 covering belt conveyor components.

IT'S WHAT'S UNDER THE BELT THAT COUNTS



QUALITY ENGINEERED CARRIERS
S-A manufactures a complete line of carriers, quality-engineered with features found in no other carrier regardless of price.

S-A CURVE CROWN® PULLEYS
Maximum belt training effect with minimum belt stretch and wear are provided with exclusive S-A CURVE CROWN design.

WRITE FOR BULLETINS 355 and 558 on Carriers and Pulleys

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PEOPLE IN THE NEWS

Brown, Cooprider named at National Gypsum

COLON BROWN has been appointed to the newly created post of assistant to the president with National Gypsum Co., Buffalo, N.Y. His job is to handle special staff assignments, relieving officers and top executives of this work. Mr. Brown has been with the firm since 1937 as manager of the Mobile, Ala., insulation board plant, general manager of the Parsons, Kan., ordnance plant, director of subsidiaries and finally as general manager of the firm's west coast paint business.

Virgil W. Cooprider has been named labor relations manager for the firm. He joined National Gypsum in 1951 as manager of the contracts and legal department at the Parsons ordnance plant. Mr. Cooprider is a graduate of Duke University Law School.

Jones to Florida area

GEORGE W. JONES, JR., of the Southern Lightweight Aggregates Corp., Richmond, Va., has been appointed representative for the firm's new subsidiary, Florida Solite Corp., Jacksonville. The company's Solite, used in making lightweight structural concrete and masonry units, is to be made in the firm's new Florida plant. Mr. Jones has served two years with the firm as representative in western Virginia and North Carolina.

Biggers on J-M board

JOHN D. BIGGERS has been elected a director of the Johns-Manville Corp., New York City, producer of building materials. Mr. Biggers is chairman and chief executive officer of the Libbey-Owens-Ford Glass Co., Toledo, Ohio. Johns-Manville recently acquired the L.-O.-F. Glass Fibers Co., in which Mr. Biggers' firm had held a controlling interest.

Funkhouser steps up as Ruberoid officer

RICHARD N. FUNKHOUSER has been elected a vice president of The Ruberoid Co., New York City. He had been an executive of The Funkhouser Co., Hagerstown, Md., maker of roofing granules, inert chemical fillers and high-purity mica. Assets and business of that firm were acquired by Ruberoid at the end of 1958. Mr. Funkhouser will be general manager of the newly formed Funkhouser Mills Div. of The Ruberoid Co. Ruberoid is a leading producer of asphalt, asbestos and gypsum building materials. Mr. Funkhouser, 42, is a graduate of Dartmouth College, Hanover, N.H.

Martin heads new Dundee Cement Co.

ROBLEE B. MARTIN, former Mississippi Lime Co. executive, has been appointed general manager of the Dundee Cement Co., Dundee, Mich. He takes charge of a $30 million cement plant now being built, a plant termed one of the largest and most modern in the country.

Mr. Martin previously was director of research and development of the Mississippi Lime Co., Ste. Genevieve, Mo., and a member of the firm's general management committee. He holds a master's degree in chemical engineering from Columbia University.

Wessels and Brown named at Great Western Aggregates

TWO NEW VICE PRESIDENTS were named recently at Great Western Aggregates, Inc., a wholly owned subsidiary of Ideal Cement Co., Denver, Colo. Vincent E. Wessels is new vice president and Thomas C. Brown is vice president and general manager of the aggregates firm.

Mr. Wessels joined Ideal in 1949 as plant manager of the Mobile, Ala., plant. Next he became technical assistant to the firm's general production manager, and in 1957 he was made assistant to the president, a post he retains. The other new vice president, Mr. Brown, started with Ideal in 1958 in the sales department. After heading field experiments for Great Western Aggregates in 1952-53, he moved to the firm's research headquarters and worked in the development of an expanded shale lightweight aggregate. The year 1955 saw him become plant manager of the Laramie, Wyo., lightweight aggregate operation. Since last August he has served as G.W.A. sales manager.

(Continued on page 36)

How progressive Indiana quarry has kept pace with rising production demands . . .

4-yard Tractor Shovel slices semi & tandem load time 75%

Original problem: Too-slow loaders

Like many quarries, Meshberger Stone Company, Columbus, Indiana, used to handle stockpile loading with power shovels and bucket loaders. Worked okay . . . *until* 1955 when the company started selling more grades of stone. Then—because these rigs couldn't move fast—*or* load fast—production suffered. Trucks were delayed, output goals unattained.

Two-year solution: Greater loading speed

Into this situation moved a rubber-tired Tractor Shovel —with the same advantages owner Leon Meshberger found had already helped some 20 other nearby quarries. The new machine was a 2¼ yd Michigan Model 175A. *It cut load time in half*—two minutes for a typical 9 ton truck. And, by traveling between stockpiles at high speeds, it virtually eliminated truck waiting time.

Today's solution: Still more speed

The 2¼ Michigan served Meshberger well until last year when the picture changed again. On one hand, demand went up so much, plant capacity was increased. Two, fleet owners had found it cheaper to haul in bigger

haul units. Again Meshberger sought a way to cut load time. His move was a natural one: to a still larger Michigan . . . this then-newly-introduced 4 yard Model 275A.

4 yards per pass

Loading capacity of this new Michigan has proved all that was expected—and more! Fifteen ton tandems now need only 3 passes, 45 to 90 seconds, to load. Twenty-two ton semis are heaped in only 4 to 5 passes, 2 minutes. Load time is two-thirds that of the Model 175A . . . one-fourth that of bucket loaders!

Material: ag lime to 6″ stone

Loading of all 15 crushed grades is ably handled by the 262 hp Model 275A: from ag lime (above) to 6″ stone—over 400 tons an hour. In readily-heaping powdery lime, bucket loads often weigh 8 tons each. In coarse stone they average 5½ tons each.

Loads small trucks effectively, too

Material goes into many different kinds of haulers, pickups to trailers. The 4 yard Model 275A handles them all. On smaller sizes, like this 6 ton dump truck, Michigan operator Verne Fawbush merely lets bucket extend over rear of truck bed toward stockpile. This way, most of the excess material from the one or two passes falls back on the stockpile; balance is cleaned by one quick swipe of the bucket.

"Good job" in shot rock

At times, the 4 yd Michigan helps out in the pit. Power, size, and reach are ample to feed the 15 ton rock wagons. Despite absence of rock bucket, unit does "good dependable job" lifting the heavy, jagged ledge material and carrying it over rough footing to the trucks.

The future:

Speed and capacity of his 4-yd Model 275A Michigan "should handle our expansion for years to come," forecasts Mr. Meshberger. But should things boom unexpectedly, the next step is here! Michigan's biggest model —*the 6 yard 375A*—is already being used in many pits! Could its 6 yard (or the 275A's 4 yard) "bites" help solve your production problems?

Michigan is a registered trade-mark of

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2481 Pipestone Road
Benton Harbor 11, Michigan
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PEOPLE IN THE NEWS

(Continued from page 33)

Roosa elected president of Buffalo Crushed Stone

HERBERT H. ROOSA has been elected president of Buffalo Crushed Stone Corp., Bowmansville, N.Y., a subsidiary of Houdaille Industries, Inc., Buffalo, N.Y. Mr. Roosa succeeds Ralph F. Peo, who remains chairman of the board.

For the past three years, Mr. Roosa has directed activities of several Houdaille units as a vice president and group executive. He continues as a vice president of the parent firm. In 1946 he began work for Houdaille as sales manager of the Manzel division, makers of automatic force-feed lubricators for engines; he next became general manager of that unit.

Reigeluth, Worthen named at New Haven Trap Rock

ROBERT S. REIGELUTH is new president of The New Haven Trap Rock Co., New Haven, Conn., and Albert L. Worthen becomes vice chairman of the board. Mr. Worthen formerly

Worthen

Reigeluth

was president, and Mr. Reigeluth, vice president and treasurer.

After joining the firm in 1946, Mr. Reigeluth held several executive positions before becoming executive vice president in 1957.

Mr. Worthen has been in the crushed stone business since 1911, when he began work as a construction engineer for the Connecticut Trap Rock Co. He headed this firm at the time it merged with New Haven Trap Rock in 1935. A pioneer in mechanizing the industry, he is a charter member of the National Crushed Stone Association and a past president.

Graff named materials chief for Inland Steel Co.

HOWARD M. GRAFF has been appointed general manager of raw materials of Inland Steel Co., Chicago. Formerly manager of the firm's iron mines in Ishpeming, Mich., Mr. Graff now has charge of Inland's limestone and coal operations as well. He succeeds Carl B. Jacobs, who is new vice president in charge of raw materials.

Cement sales manager

WILLIAM R. MONTGOMERY has been named general sales manager for Mississippi Valley Portland Cement Co., Jackson, Miss. He will be vice president of Valley Cement Sales, Inc., the sales division of the new firm, whose new $5 million plant near Redwood, Miss., recently went into production. Mr. Montgomery, 37, is a graduate of the U. S. Naval Academy and a veteran of World War II.

Rapp is chief engineer

WILLIAM L. RAPP has been named to the post of chief engineer with North American Cement Corp., New York City. He had been assistant chief engineer. Mr. Rapp succeeds Jesse E. Tindall, who has moved to Designers Metals Corp., Chicago, as chief operating manager. **END**

OBITUARIES

Daniel C. Sill, president of Kern Rock Co., Bakersfield, Calif., died recently. Mr. Sill purchased the firm and built it into an important two-plant operation. He was a civic leader in Bakersfield, helping to bring important Lockheed Aircraft Corp. plants into the area. He was 59.

Roy E. O'Brien, field secretary of the American Institute of Mining, Metallurgical and Petroleum Engineers and former general foreman of Anaconda Copper Mining Company's phosphate operations at Conda, Ida., died January 9. Mr. O'Brien was widely liked throughout the mining industry—for his ability, wide experience and great friendliness. His success with AIME was indicated by the great record of membership growth posted during his term as staff member. He was 61.

Charles B. Lundin, sales manager of the Dallas, Tex., area for The Ruberoid Co., died January 20. He joined the firm in 1937 as a Louisiana sales representative and became manager of the Dallas district in 1946. He was 52 years old.

Ernest E. Leggett, partner with his brother Miles in Leggett Brothers Sand and Gravel Co., Murray, Utah, died January 16. He was 60.

Frederick W. McMillin, Jr., president of the Genesee Stone Products Corp., Batavia, N.Y., died January 25 after an accident. Mr. McMillin was also president of the Genesee Bituminous Products Corp. and the Batavia Washed Sand and Gravel Corp., both of Batavia. Mr. McMillin, 58, had suffered rib fractures and internal injuries January 12 when his auto plunged 50 ft. into one of his firm's quarries.

Everett G. Rogers, former purchasing agent for International Talc Co., Gouverneur, N.Y., died January 24. After becoming purchasing agent for the firm in 1943 he worked there until retirement in 1954. He was 75.

Kenneth B. Arnold, district sales manager at Cincinnati, Ohio, for the U. S. Gypsum Co., died January 28. A graduate of the University of Texas and a World War II veteran, Mr. Arnold was 40.

Joseph E. Carroll, Jr., vice president of the Uvalde Rock Asphalt Co., San Antonio, Tex., died January 23. He was 60.

Whitby F. Wise, founder and chairman of the Southwest Stone Co., Dallas, Tex., died January 19 at 69. A graduate of Texas A&M College, College Station, Mr. Wise for many years was president of his firm. A past president of the National Crushed Stone Association, he had been an executive committee member and at the time of his death was a member of the board of directors.

Leo P. Kunkel, sales manager of the Chicago office of The Chicago Gravel Co., Chicago, died January 21. He had been associated with the Chicago aggregates firm almost 25 years.

Enter 1401 on Reader Card

Model 480 Michigan does push-loading job normally requiring two big track-mounted machines working in tandem.

600 hp Michigan, stripping uranium overburden,

push-loads 30 yds: 48 seconds

Pushing singly, this giant Michigan Dozer regularly heaps 30 yard scrapers *in 48 seconds!*

Its high speed of pushing, back-up, and positioning enables the huge Michigan, *by itself*, to handle loading of five of these big pans on cycles as short as 2,000 feet.

Its job is on a 5,000,000 yard per year stripping contract for Lucky Mc Uranium Corporation, on their property east of Riverton, Wyoming. Material varies from tight hardpan to loose sand and gravel. Company officials chose the 52 ton, 600 hp rig, biggest of four Michigan Dozers available (the others: 165, 262, 375 hp), for both pushing and pit-floor dozing.

In normal pusher operation, the big Michigan works in a cut 50 to 80 ft deep, 600 ft wide. As each scraper drops its pan, torque converter-equipped Michigan makes smooth contact, drives ahead in second gear. Detailed time studies, covering over 300 loads and made under a wide range of temperature and weather conditions, show the scrapers heaped and on their way in *an average of 48 seconds*. Loads scale out at an average of 30 loose, 23.6 bank yards! With Michigan's power shift providing instant change of speeds and direction, back-up and positioning time average only another 25 to 30 seconds per scraper. Boosting load out of cut takes 4 seconds. Scraper output, with the Michigan pushing, regularly averages 38 loads (894 bank yards) per 50-minute working hour.

The Michigan's 28½ mph speeds on rubber make it a natural for handling scattered emergency tasks and occasional fill dirt dozing, too.

If you have similar big-yardage scraper or dozer jobs, perhaps this big mobile Michigan can give *you* similar cost-cutting advantages. It will cost you nothing to find out. Just call your local Michigan Distributor (or us) for a detailed on-your-job analysis and possible test demonstration.

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Heavy Construction Operators

GO FORD-WARD for greater payload... power..

"Our Ford trucks haul up to a ton-and-a-half more payload per trip"

says William R. Collins, V.P.
William Collins and Sons, Fargo, N.D.

"We switched to Ford trucks in 1951 because we found we could haul 1½ tons more per trip. Now we have 124 Fords, including 80 T-700's. They're economical to operate, too—we get up to 6 miles per gallon. Our drivers like Ford's power steering and peppy 302 HD V-8 engine. We like Fords because we know we can always get Ford parts quickly if we need them. That means our trucks aren't down over one day, even on a major overhaul."

"We trade every two years and find that Ford trucks bring highest resale price"

says John McCormick, Sec.-Treas.
Northern Improvement Co., Fargo, N.D.

"We keep our Ford T-700's in top condition year round, and it pays off. We get a higher resale price when we trade every two years. Fords have the ability to perform under the rugged conditions in our work. Power steering on our tandem dumps makes them easy to handle on-or off-the road.

"Our drivers like Ford's power . . . they get heavy loads under way fast"

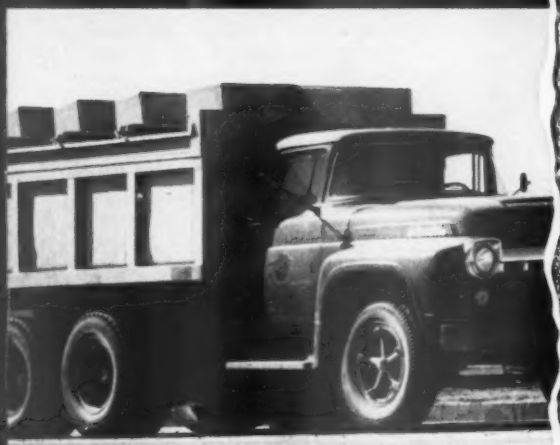
says George C. Wilson, General Superintendent
Schultz and Lindsay Construction Co., Fargo, N. D.

"Ford's HD power in our T-750's gets heavy loads under way fast . . . helps keep us on schedule. And we can haul bigger payloads doing it . . . up to a yard more, legally, every trip. We've never had frame trouble either. They're rugged, durable trucks and if we ever need Ford parts, we can always get them at the nearest town."

FORD TRUCKS COST LESS

LESS TO OWN... LESS TO RUN... LAST LONGER, TOO!

..resale value!



NOW!
CERTIFIED PROOF
FORD TRUCKS
COST LESS

All tests conducted and results
CERTIFIED
by America's foremost independent automotive research organization*
*NAME AVAILABLE ON REQUEST
Send inquiry to: P.O. Box 2687 Ford Division, Ford Motor Co. Detroit 31, Michigan

'59 Ford Pickups Win Economy Showdown U.S.A.

—average 25.2% better gas mileage!

Impartial tests of the 1959 pickup models of all six makes prove conclusively that Ford's ½-ton pickups equipped with Short Stroke Sixes are the economy champs for '59.

HOW TESTS WERE MADE

Standard six-cylinder models of the six leading half-ton pickups first were put through exhaustive road trials. All '59 trucks—Ford and competitive—were bought from dealers, just as you would buy them. After at least 600 miles break-in, all were brought up to manufacturer's recommended specifications.

The trucks were then tested—by America's leading independent automotive testing firm—at constant speeds of 30, 45 and 60 miles an hour. Next came stop-and-go tests, ranging from moderate city traffic to normal retail delivery operation. Acceleration rates were carefully timed in each gear to insure accurate results for all makes.

HOW NEW '59 SIXES RATE IN GAS MILEAGE

'59 FORD SIXES GIVE	25.2% more miles per gallon than Make "C"	31.1% more miles per gallon than Make "I"	9.6% more miles per gallon than Make "G"	42.6% more miles per gallon than Make "D"	22.0% more miles per gallon than Make "S"	25.2% more miles per gallon than the average of all makes

The '59 Ford Sixes, *in every test*, averaged more miles per gallon than every other make! Combining all tests, the '59 Fords led the average of all other '59 pickups by 25.2%.

WHAT'S THE SECRET?

How can a '59 Ford Six make four gallons do the work of five in other trucks?

First, of all pickup Sixes, only Ford has modern Short Stroke design. This new type of engine is basically far more efficient than long-stroke Sixes of other pickups. Example: Ford's Six delivers more usable horsepower than any other pickup Six.

Second, to this modern engine Ford has added a new economy carburetor. By metering fuel more precisely in both low- and high-speed ranges, Ford's new carburetor boosts gasoline mileage in every type of driving. And Ford's *Economy Carburetor* is *standard at no extra cost.*

Your Ford Dealer now has the complete report of Economy Showdown U.S.A. Why not call or visit him today and get the whole story firsthand?

INDUSTRY NEWS

Basic conveyor system is flood casualty

THE RAMPAGING SCIOTO RIVER caused $240,000 damage to Basic Construction Co.'s plant near Chillicothe, Ohio, including the nearly total destruction of a belt conveyor system that brought material to the plant from a deposit on the other side of the river (see ROCK PRODUCTS, February, 1958, Page 102).

Before the flood

In addition to the conveyor system, a $100,000 stockpile of sand and gravel was wiped out by the January 23 flood. Basic's suspension bridge spanning the Scioto as part of the conveyor system escaped damage. Watermarks on a block-house located at the river's edge and on the bridge showed that the waters reached 40 in. above the century-old levee that exists there.

Raw materials formerly discharged at the end of the bridge conveyor to a 996-ft. belt conveyor that crossed the river flats on a man-made embankment. The system was completed in July, 1957.

Planning begun for 1959 AMC convention

COMMITTEE CHAIRMEN for the 1959 Metal Mining and Industrial Minerals Convention of the American Mining Congress, which will be held in Denver, Colo., September 14-17, met in Denver February 19 under the direction of Cris Dobbins, chairman of the AMC Western Division and general chairman of the convention.

The February 19 meeting was devoted to general plans for making the mining visitors' stay in Denver an enjoyable one. Topics discussed included publicity for the meeting, the welcoming of delegates, entertainment plans for the mining men and their wives and the scheduling of trips to important Colorado mining and metallurgical operations. The program for the convention sessions will be worked out by a national committee headed by Chester H. Steele, vice president of Western Operations, The Anaconda Co., Butte, Mont.

Houdaille acquires R. H. Wright & Son

HOUDAILLE INDUSTRIES, INC., Buffalo, N.Y., has purchased, for cash, the physical assets and business of R. H. Wright & Son Co., Fort Lauderdale, Fla. The business will be run as a wholly owned subsidiary of Houdaille under the name R. H. Wright, Incorporated.

Houdaille plans an extensive expansion of the new subsidiary's construction materials operations throughout Florida and the southeastern part of the United States. All former R. H. Wright personnel will be retained, although Robert L. Hummel, a Houdaille officer, will become executive vice president and chief executive officer of the subsidiary.

Universal Ready-Mix, Arrow Sand merger okayed

SHAREHOLDERS APPROVED the merger of Universal Ready-Mix Co. and the Arrow Sand & Gravel Div. of Marble Cliff Quarries Co. during the annual meeting of the parent company at Columbus, Ohio. Hector E. Eschenbrenner, owner of Universal, was made a director and vice president of Marble Cliff Quarries Co.

Lehigh Portland Cement expands Alsen, N.Y., plant

LEHIGH PORTLAND CEMENT CO. has launched an $8 million expansion program to increase production and storage capacity of its plant at Alsen, N.Y. A kiln, a finishing mill and 20 new silos capable of holding about 10,000 bbl. of finished cement each will be built by next year.

(News continued on page 42)

Enter 1527 on Reader Card

"Euclids give us good service with low maintenance and keep our hauling costs at rock bottom"

LOUISVILLE CEMENT COMPANY, SPEED, INDIANA

Six 22-ton Euclid Rear-Dumps are hauling mortar stone, Portland cement stone and overburden at the Speed, Indiana, quarry of Louisville Cement Company. Working an 8 hour shift, three of these "Eucs" handle 400 tons per hour on hauls ranging from 1000 to 3000 feet. The wide bodies with struck capacity of 15 yards are loaded by a 4½ yd. shovel in four passes. Two other units are loaded by a 2½ yd. shovel. With loaded speeds up to 30 mph, they average 80 tons per hour on a 2 mile one-way haul. In addition, three of these "Eucs" work a second shift hauling overburden.

Louisville Cement Co., like hundreds of mine and quarry operators, has found that Euclid equipment moves more tons at lowest operating and maintenance cost. Dependable Euclid performance is the result of advanced engineering, rugged construction and almost 25 years experience with off-highway haulers.

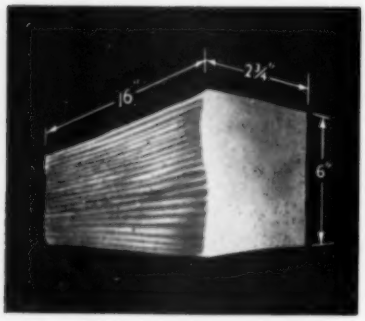
To be sure you have the most economical hauling equipment, get a production and cost estimate from your Euclid dealer on the model best suited to your work — you'll find there are a lot of reasons why ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE



How long did it take to gouge out this 64 cubic inches of steel?

Fourteen hours' time were formerly required to chip 64 cubic inches of metal from a 5-ton reaction-type turbine casting. Using the Arcair cutting and gouging torch the job was done in 1½ hours, saving this company 12½ hours of costly, hard work, not counting clean-up time formerly required — and completely eliminated with the Arcair process!

You can cut, gouge, bevel or groove **any** metal using the Arcair process — and get similar dramatic cost savings, with an investment of much less than $100.

HOW DOES ARCAIR WORK? The 1½-lb. torch utilizes Arcair COPPERCLAD electrodes, energized by current from a welding machine to melt the metal. Air from an 80-100 p.s.i. air line travels through the torch and out tiny holes in the head, pushing the metal ahead of the worked surface. Fifteen minutes instruction is all an operator needs.

WHAT'S YOUR PROBLEM? If you have a specific metal removal problem, or would like additional information, write us. Or, ask your welding supply distributor.

Arcair

THE ARCAIR CO., 473 S. Mt. Pleasant St. Lancaster, Ohio

Send me more information on ARCAIR TORCHES and COPPERCLAD ELECTRODES.

(Name)

(Title)

(Company)

(Address)

(City) (State)

MY PROBLEM

Enter 1403 on Reader Card

INDUSTRY NEWS

(Continued from page 40)

Ideal Cement Co. sets up scholarship

IDEAL CEMENT CO., Denver, Colo., has established a $2,500 graduate fellowship in civil engineering at the University of New Mexico. John W. Hand, business research director for Ideal, wrote Dr. Edward F. Castetter, UNM academic vice president, that the fellowship is for the "purpose of encouraging outstanding students to further their education." A second reason, Mr. Hand stated, is "to promote advanced research in the field of concrete, its components and its uses, both actual and potential."

The program may begin in either June or September of this year and run for a year.

Penn State sets seminar on electrical precipitation

OF INTEREST TO ENGINEERS in public utilities, the cement industry and in various other industries concerned with the installation and operation of precipitation equipment will be Pennsylvania State University's Electrical Precipitation Seminar, to be held June 14-19 at University Park, Pa.

Ralph E. Armington, associate professor of electrical engineering at Penn State and coordinator of the seminar, said the first day of the event will be devoted to basic principles, including the nature of dust particles, the electrical charging of particles and the collection and removal of charged particles. This presentation will be made by Dr. Harry J. White, director of research, Research-Cottrell, Inc.

Other topics that will be considered include fly-ash and cement-dust collection, air cleaning for air conditioning and air-pollution control. Speakers on these topics will include Sidney R. Orem, vice president, the Thermix Corp., and Gaylord W. Penney, professor of electrical engineering, Carnegie Institute of Technology.

Further information may be obtained from Prof. Armington or the Extension Conference Center, Pennsylvania State University, University Park, Pa.

N. C. crushed stone firm starts operations

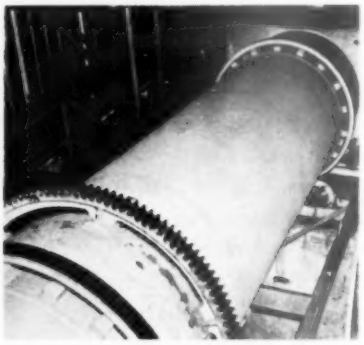
OPERATIONS WERE SCHEDULED to begin in March at the Bessemer City Stone Co., Inc., Bessemer City, N.C. The crushed stone firm is headed by Wilbur C. Kiser, Shelby, N.C. Other officers are Clay Arrowood, Lincolnton, N.C., vice president; A. K. Froneberger, Lincolnton, secretary; George C. Deck, Bessemer City, treasurer; Kenneth Hill, Rutherfordton, N.C., chairman of the board.

The main operation will be the quarrying of a huge deposit of granite about four miles from Bessemer City. The company will also mine any other minerals that may be found at the quarry site, Mr. Kiser said. Core drillings were being made on the site to show the depth of the rock formation and to discover what minerals are available.

The granite deposit lies near property controlled by the Lithium Corp. of America and believed to contain some lithium ores.

Foundry sand conditioned at new Kaiser plant

THIS ROTARY COOLER, built by Standard Steel Corp., Los Angeles, Calif., is an integral part of Kaiser Steel Corp.'s new foundry sand conditioning plant at Fontana, Calif.



First of its kind to be put into operation on the West Coast, the installation for recovering and conditioning special foundry sand includes an automatic shake-out, the rotary cooler, fines removal system, storage facilities and blending machinery. Red-hot foundry sand enters the rotary unit at 1,800 deg. F. and exits at about 150 deg. F.

Ordinarily, in large ingot foundries flasks filled with sand are shaken out on the foundry floor. The sand is then left to cool by itself over a lengthy period, or water may be sprayed on it to hasten cooling.

Kaiser Steel makes ingot molds ranging from 2 to 36 tons apiece in this foundry for its own use at Fontana. As Kaiser's new steel-making facility comes into production, the average weight of the individual ingot molds is expected to be increased.

(News continued on page 46)

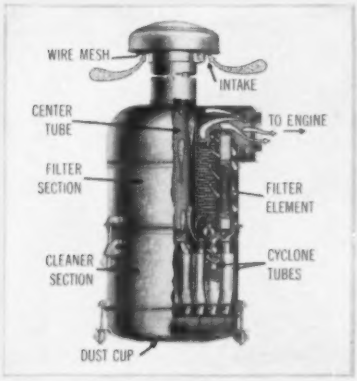
Enter 1404 on Reader Card

SPECIAL REPORT TO CATERPILLAR OWNERS:

Parts you can trust. Dependable round-the-clock service

New Caterpillar dry-type air cleaner: CUTS SERVICING TIME 75% AVAILABLE FOR FIELD INSTALLATION on D8, D9, DW20, DW21 and No. 583

AIR-BORNE DUST is the deadly enemy of your engine's vital parts. Now, the new Cat dry-type cleaner gives positive protection against the entrance of harmful dirt—and its simplified servicing requires only about 5 minutes instead of 20 as with the oil-bath type!



THE NEW CATERPILLAR DRY-TYPE AIR CLEANER removes 99.8% of the air-borne dust from the intake air, even under the most severe conditions. Air enters through the stack cap where wire mesh screens out leaves and similar trash. Then the air passes down the center tube and swirls down the cyclone tubes. Centrifugal action throws the dirt against the sides of the tubes. From here 95% of the dirt falls through the funnel section into the dust cup, and the relatively clean air passes on to the resin-impregnated, cellulose filter. This element removes the rest of dirt and allows only clean air to enter the intake manifold. Filter elements can be cleaned and have lasted 3,000 hours without loss of efficiency.

SERVICE COSTS ARE SLASHED! Here is the experience of WEGCO Equipment Rental, Inc. of Cleveland, N. C., as told by the Superintendent of Maintenance, Mr. George R. Bell, "The dry-type cleaner saves us money. We have to clean our air cleaners daily because of dusty conditions. The oil-bath cleaners take about 20 minutes to clean and 5 quarts of oil. That's 60 cents in labor and $1.28 worth of oil, a total of $1.88 per machine. This dry-type cleaner takes only 5 minutes to service—about 15 cents labor. It saves us $1.73 on each machine every day."

SERVICE TIP: To empty dry-type cleaner dust cup, simply loosen wing nuts, remove cup, empty and replace. Occasionally the filter element will need cleaning. Merely remove it, blow off dust or wash in water, then replace.

YOUR CATERPILLAR DEALER has the full story on how much *you* can save by changing to the new and efficient Cat dry-type air cleaner. Remember, he stands behind every part he sells. See him today!

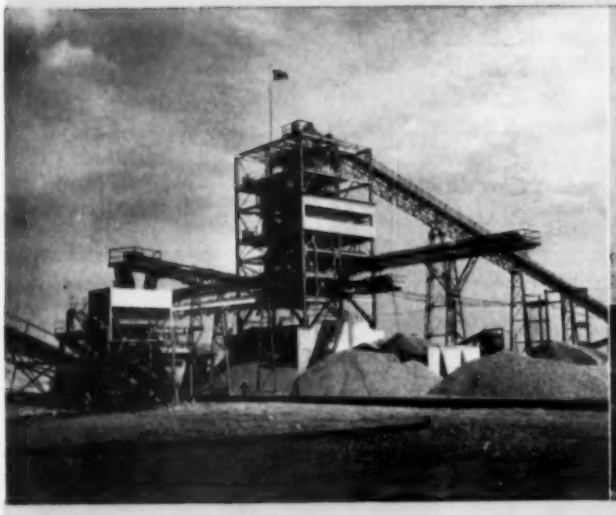
Caterpillar Tractor Co., Peoria, Illinois, U.S.A. **CATERPILLAR**

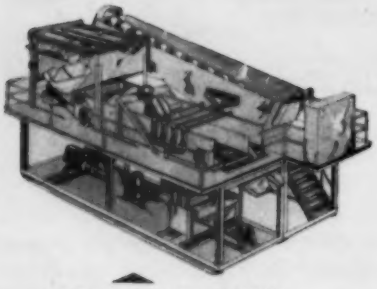
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

71 of the 100 Largest Use Eagle

HUNDREDS of small sand and gravel plants successfully use Eagle Equipment, but equally significant is the fact that seventy one of the one hundred largest producers use Eagle Equipment extensively. It is also significant that some of these producers were not among the top 100 at the time they started using Eagle Equipment.

The reasons for the overwhelming predominance of Eagle installations are obvious: Eagle pioneered washing and classifying equipment. Eagle has the broadest experience in the field by far. Eagle has the broadest line—water-scalping-classifying



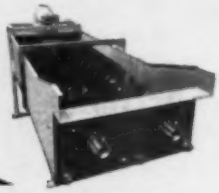


EAGLE HEAVY MEDIA SEPARATION PLANTS

Most efficient HMS plant on the market because it uses the patented OCC Separatory Vessel—provides fast, positive separation of sink and float material. Eagle Densifier gives positive recovery of heavy media. Made in 4 block sections, readily transported and erected at plant site. Capacities to meet customer needs

EAGLE FINE MATERIAL WASHER-CLASSIFIER-DEHYDRATORS

For thorough washing and dewatering plus classifying of fine material to readily meet specifications. Water lubricated lower bearings, *new* totally enclosed gear drive in oil bath, 3-sided adjustable long overflow weir, larger settling area and feed control box. Way ahead in design and performance. Single Screw and Double Screw Units.



EAGLE COARSE MATERIAL WASHER - DEWATERERS

For thoroughly washing and dewatering coarse materials. Corrugated paddles in pool area open up and abrade material, screw flights in drainboard area give thorough dewatering action. Water lubricated marine type lower bearings. *New* totally enclosed gear drive in oil bath. Single Screw and Double Screw Units.

EAGLE WATER SCALPING-CLASSIFYING TANKS

Eagle pioneered and perfected. Provide (1) removal of excess water and silt, (2) classification of material and (3) retention of needed fines. For dry pit or dredging operations. Features Power-Operated Bleeder Valves, Metering "Splitter" Gates and Multi-Cell Collecting-Blending Flumes.

Sand and Gravel Producers Equipment

tanks, fine material units, coarse material units, log washers, HMS plants, equipment for special problems such as slate and coal removal. The most comprehensive, factory-trained sales and service organization.

If you are not presently using Eagle Equipment let us demonstrate what it is doing for sand and gravel producers in all 49 states, Canada and elsewhere. Whether yours is a single or multiple plant operation, Eagle Equipment can increase your efficiency, enable you to meet specifications and lower your costs. Send for Catalog. **Eagle Iron Works, Engineers and Manufacturers, 137 Holcomb Ave., Des Moines, Iowa.**

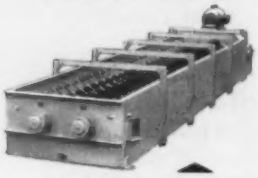
SINCE 1872

EIW

EAGLE IRON WORKS

EAGLE PORTABLE SECTIONS

Complete fine material washing-classifying-dehydrating sections on wheels. For dry pit or dredging operations. Easy to move. Consists of Water Scalping-Classifying Tank and two Single Screw Fine Material Washers. Same proven equipment as Stationary Sections.

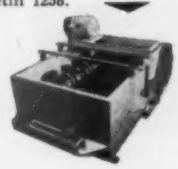


EAGLE LOG WASHERS

Eagle Log Washers do superior job of washing gravel, crushed stone or ore with interlocking double tubular steel log shafts and renewable Ni-Hard paddle shoes *New* totally enclosed, oil bath. Gear drive handles large horsepowers for severe scrubbing.

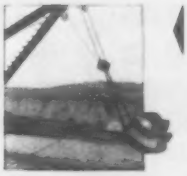
EAGLE STABILIZED ROAD BASE MIXERS

For plant mixing of stabilized road base material such as fine and/or coarse aggregate with required additives, aggregate with clay or crushed stone with crusher dust. Controlled volume of water added simultaneously. Described in Bulletin 1258.



EAGLE "SWINTEK" DREDGING LADDERS

Eliminate pumping delays and increase production. Traveling chain screens nozzle; keeps out boulders and debris which clog lines and cause pump damage. Cutter bars agitate deposit, increase intake of solids, cut through clay strata and cut ladder clearance. Permit recovery from greater depths. Can be installed on any present dredge or on new Eagle all-steel dredge.



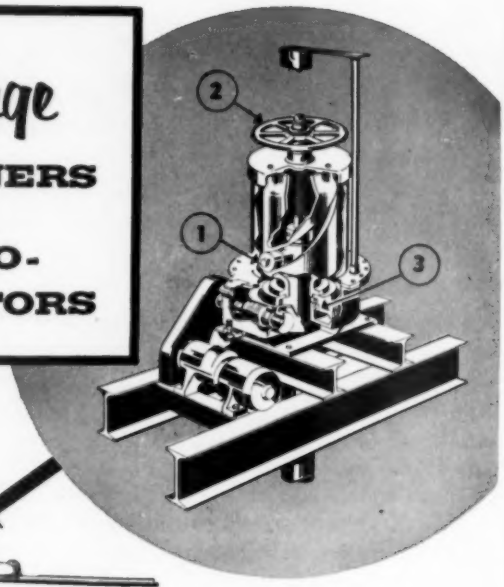
EAGLE CUTTERHEAD DREDGING LADDERS

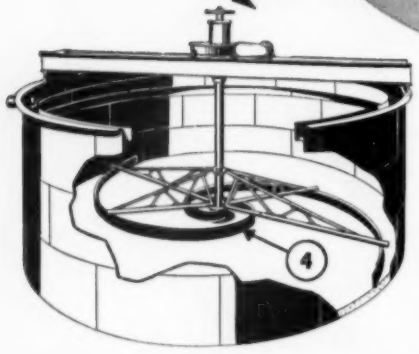
For underwater deposits where sand does not cave readily. Revolving cutterhead breaks up compacted masses . . . enables dredging to a grade line. Drive shaft runs from cutterhead to power source above water. Can be installed on any dredge.

Enter 1428 on Reader Card

Hardinge

THICKENERS and HYDRO-SEPARATORS





. . . for all clarifying, thickening and de-sliming operations.

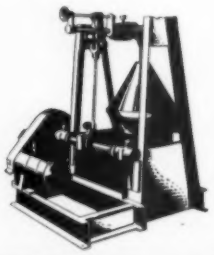
For flotation concentrates thickening ahead of filtering—or for tailings disposal or reclamation, Hardinge Thickeners provide:

1. "Auto-Raise" to avoid lost production from overloads.
2. Manual or power raise to supplement "Auto-Raise."
3. Replaceable ring-type ball bearing support for rotating mechanism.
4. Spiral rakes for maximum underflow density.

Also available are froth rakes for froth-free overflow and superposed type tank construction for minimum floor space and building economy. Complete specifications on request. Bulletin 31-D-7.

Hardinge Diaphragm Pumps . . . an important thickening accessory

Hardinge Diaphragm Pumps handle metallurgical and chemical pulps, particularly pulps from thickeners. The operator may adjust the stroke or capacity while the pumps are in operation—a very important feature. Moving parts are well above the bowl and out of any splash zone. Valves may be changed without dismantling the unit.



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INDUSTRY NEWS

(Continued from page 42)

International Minerals completes new feldspar mill

A NEW FELDSPAR MILL, recently completed by International Minerals & Chemical Corp. near Custer, S. Dak., is in full-scale operation. The new mill building, which replaces one destroyed by fire last July, has already made substantial shipments to various parts of the U. S., Canada and Mexico. It is the first dry-process feldspar grinding unit built in the U. S. since 1935, according to International.

Five 54-ft. silos, each with 500-ton capacity for refined feldspar storage, and two smaller ore-storage silos have also been completed. The modern, fireproof mill is equipped with the latest in machinery that crushes, grinds and air-classifies feldspar into five different grades for IMC's markets in the pottery, enamelware and glass fields.

Other buildings planned or under construction at the site include a laboratory, an office and administration building, and a combination change-house and locker-room for employes. The entire installation will be completed this year at a cost of about $\frac{1}{2}$ million.

The original IMC plant, a set of frame structures built in the mid-30's, was destroyed last July in a fire started by lightning. Loss was estimated at about $400,000. There were no injuries to personnel.

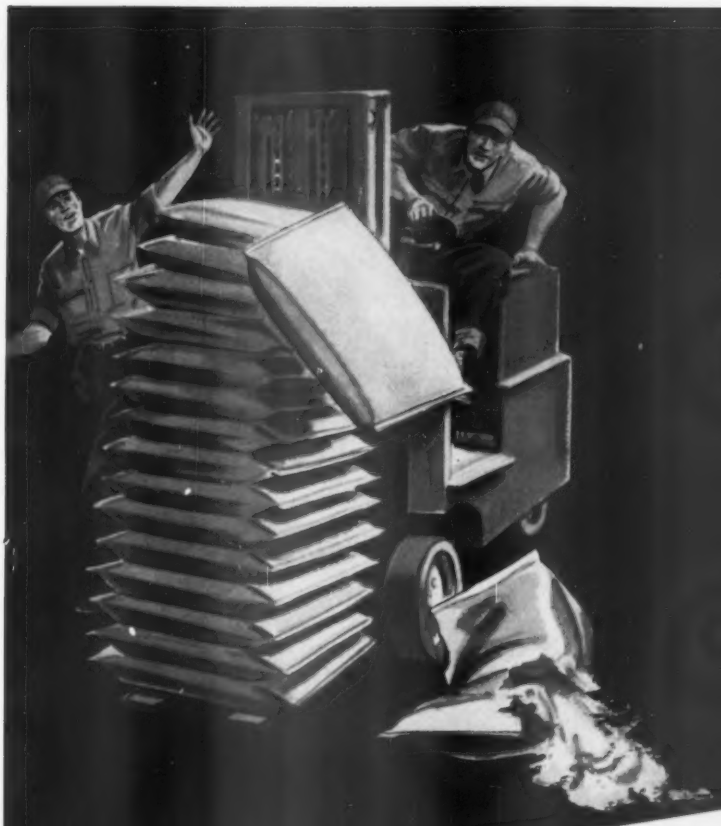
Vulcan Materials acquires three N. C. quarries

VULCAN MATERIALS CO. completed agreements to acquire three North Carolina quarry properties, according to Charles W. Ireland, Vulcan president. Vulcan will issue 110,000 shares of new common stock in exchange for all of the capital stock of the North Carolina companies: Greystone Granite Quarries, Inc., Pioneer Quarries, Inc., and a third quarry property owned by principals of Pioneer.

Pacific Cement & Aggregates plans Hawaiian purchase

PACIFIC CEMENT & AGGREGATES, INC., is negotiating for the purchase of Clarke-Halawa Rock Co. and its affiliates in Honolulu, T. H. The price to be paid for the Hawaiian firm, one of the largest rock businesses in the islands, was said to be about $1 million and the transaction was expected to be for cash, rather than stock.

(News continued on page 50)



WHY LET YOUR MONEY SLIP AWAY?

Hudson's Super-Magnetized
Multiwalls
Cut Slippage
Prevent Breakage

FIELD REPORT

TO: B.D.

RE: How Super-Magnetized Cut Claims for [redacted].

Because his is an expensive product, Mr. [redacted] insists on maximum protection for his shipments. Losses through sack breakage due to slipping had become something of a phobia with him. Since he switched to our Super-Magnetized Multiwalls he has not had a single claim arising from slippage.

Actual cash savings have far and away absorbed our upcharge for these bags. He also reports an improvement in customer good will.

Hudson Bags increase your sales — cut your costs!

HUDSON MULTIWALLS

for further information write:

HUDSON PULP & PAPER CORP.
477 Madison Avenue • New York 22, N. Y.
Enter 1465 on Reader Card

Plants at Pine Bluff, Ark. • Palatka, Fla. • Wellsburg, W. Va.

Protection with Gulf products pays off in maintenance

GULF MAKES THINGS

At its new Pomona Quarry near Guilford College, N.C., Superior Stone Co. has about $300,000 worth of heavy equipment including a bulldozer, air compressor, power shovels, crushers, the usual assortment of towers and conveyor belts—and 4 brand new Euclid dump trucks.

"I'm especially interested in the maintenance of the Eucs, because they're new, and because they do such brutal work," said Mr. Williams, Pomona Quarry Superintendent. "They carry about 23 tons of granite, up a 35% grade about every 15 minutes, 7½ hours a day. And they work in clouds of fine granite dust that even gets past a good filter."

So, with special emphasis on the Eucs, Gulf made a comprehensive survey of all equipment. A consolidated fuel and lubrication chart was drawn up, reducing the number of fuels, oils and greases required—in line with manufacturers' specifications. This not only insured proper fueling and lubrication, it also simplified purchasing and stockpiling.

For the hard-working Euc engines, Gulf recommended high-detergency Gulflube Motor Oil X.H.D. and Gulf Dieselect—a fuel especially formulated for heavy duty diesel engine service.

After 15 months of tough service, and 2,100 hours of operation, the Euclid truck engines were examined by Mr. Williams. "Everything was clean," he said. "Almost no engine deposits. Only a minimum of sludge. Exhaust ports not clogged up. The program recommended by Gulf is paying off in every respect. It's helping us amortize our expensive equipment."

Up, over and into the hopper go some 20 tons of granite, being unloaded here by one of the hard-working Eucs at Pomona Quarry. Engines showed no harmful deposits after 2100 hours on Gulf Dieselect fuel and Gulflube Motor Oil X.H.D.

Pomona Quarry of Superior Stone, near Guilford College, N. C. Superior Stone, headquartered in Raleigh, N. C., works a number of quarries in both Carolinas and Georgia. All powered equipment operates on Gulf fuels and lubricants.

savings at new quarry...

RUN BETTER!

How's *your* equipment doing—on maintenance and performance? See how Gulf makes things run better. Just call a Gulf Sales Engineer at your nearest Gulf office. Meanwhile, write for 88-page "Contractors' Guide"—the maintenance "bible" for heavy equipment.

GULF OIL CORPORATION
Dept. DM, Gulf Building,
Pittsburgh 30, Pa.

GULF

Marion Williams, left, Superintendent of Superior Stone's Pomona Quarry, discusses his fuel and oil preventive maintenance program with Julian Lanier, Gulf Sales Engineer.

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RECOGNIZE THIS LOT?

It's the lot of a Caterpillar Dealer, one of over 300 in the U. S., offering you the best buys in used equipment!

No matter what you want in used equipment, no matter what the price range, your Caterpillar Dealer is headquarters for your best buy. No other dealer offers you "buys" with this protection:

BONDED BUY

1 **A "BONDED BUY"** up to $10,000 on used Cat-built equipment—your guaranteed assurance of satisfactory performance on *all* parts of the machine during the guarantee period.

2 **A "CERTIFIED BUY"**—his written guarantee covering units of any make.

3 **A "BUY AND TRY"** deal—his written money-back agreement on units of any make.

For the best buys in your area, to be *sure* of what you're buying, see your Caterpillar Dealer. You'll find him listed in the Yellow Pages!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

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BEST BUYS IN NEW AND USED EQUIPMENT

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INDUSTRY NEWS

(Continued from page 46)

Lehigh begins expansion of Mitchell, Ind., plant

GROUND WAS BROKEN February 10 for the first part of what is expected to be a complete rebuilding of the Mitchell, Ind., plant of the Lehigh Portland Cement Co. First phase of the project consists of a new kiln department. Two 400-ft. kilns will be built to replace ten 125-ft. kilns, part of the original installation made in 1906.

The kilns will be completed and equipped at a cost of about $5 million. They will produce as much clinker as the former 10 kilns, and at less cost. The new kiln department is expected to be completed by the end of 1959. A dust suppression program also is being carried out in conjunction with the construction.

When the present construction is completed, Lehigh expects to follow it with two subsequent undertakings, neither of which has yet been definitely scheduled. The second step will be the installation of a new battery of storage silos for finished cement, which will facilitate trucking operations. The third and final phase—new storage, blending and grinding facilities—will, upon completion, give Lehigh a brand-new plant adjacent to the present one.

Marble Cliff Quarries starts product research

TO ESTABLISH rigid quality control of all its products as well as to develop future potential markets for its raw materials, The Marble Cliff Quarries Co. of Columbus, Ohio, has put into operation a research and development department which includes a modern testing laboratory with the latest mechanical equipment.

Included in this equipment is a new-type mechanical testing screen that is used to test approximately 100 different types and sizes of stone, including manufactured sand and agricultural products. Another unusual piece of equipment is a forced-draft drying oven with fully automatic temperature controls and time cycles. This is used for testing sand samples that must first be washed and dried.

Quality control begins with the basic stone. After being screened in the new mechanical test screen, it is subjected to various tests, such as the sodium sulphate soundness test which, by simulating freezing and thawing conditions in the field, determines the soundness or shatter resistance of the aggregate. The stone is then given an abrasion test to discover its wearing properties and a chemical analysis test, particularly important for flux and agricultural stone, to determine its chemical properties. A highly qualified inspector and concrete technician is in charge of all testing and quality-control procedures, which cover all of Marble Cliff's plants in Ohio. Victor Burton has general supervision over the entire research and development department.

Besides assuring its customers of the highest-grade products with no variations in quality, the new laboratory will enable Marble Cliff to meet more efficiently the various specifications for limestone set up by federal, state and local highway departments, railroads, steel mills, the CAA and the Department of Agriculture.

Lake Ontario sees return to full capacity

OPERATIONS OF Lake Ontario Portland Cement Co., Picton, Ont., will probably return to full capacity this spring, G. H. Elliott, president, told *The Financial Post*. Production was maintained at a level above sales throughout the winter months to build up inventory. The level, however, was about 50 percent below the peak that the new plant reached last April during its start-up period.

Capacity operations were maintained at that time to build up initial inventory and test equipment under full load. The peak in monthly sales was reached last September with aggregates and last October with cement. The levels reached were higher than anticipated, Mr. Elliott stated. Seasonal decline and curtailed construction activity subsequently reduced sales below production level.

Dominion Tar & Chemical acquires Gypsum Lime

STOCKHOLDERS OF Gypsum Lime and Alabastine, Canada, Ltd., approved the sale of the company's assets to Dominion Tar and Chemical Co., Ltd. Gypsum Lime shareholders will receive two shares of Dominion Tar plus $14.50 in cash for each Gypsum Lime share they own.

Planners okay quarry

LIVINGSTONE ROCK AND GRAVEL CO. has received Riverside County (Calif.) Planning Commission approval of its proposal to establish a rock crushing and quarry operation in the Temescal Canyon area southeast of Corona.

(Continued on page 53)

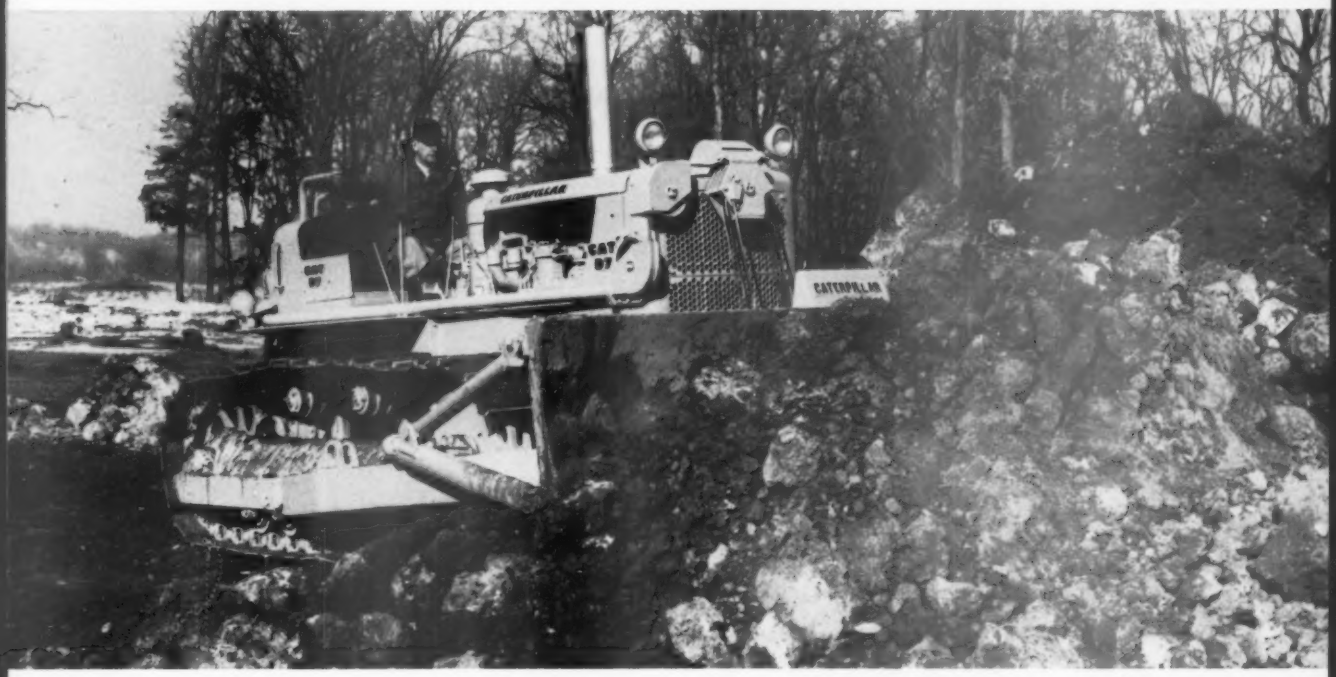
Enter 1407 on Reader Card

CATERPILLAR'S PROJECT PAYDIRT

PROJECT PAYDIRT* *pays off again*

NEW CAT D7 SERIES D TRACTOR

For higher production at lower operating cost



BY ANY comparison the new Cat D7 Series D Tractor is champ in its class. It packs 140 horsepower . . . matched with 80% more lugging ability than the previous model—for greater production. And it delivers this production at lower operating and maintenance costs. The payoff for you . . . increased performance that no other tractor in this power range can match.

Major improvements, developed by Caterpillar's Project Paydirt, affect the engine, power train and undercarriage. And the new Series D retains the exclusive Caterpillar Oil Clutch. It's time-tested; delivers up to 2,000 hours—one whole season—without adjustment.

For complete facts about the leader, see your Caterpillar Dealer. He's ready to give you the whole story on the new D7 Series D. And he'll arrange a demonstration on your job.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

* ***PROJECT PAYDIRT:*** Caterpillar's multi-million-dollar research and development program — to meet the continuing challenge of the greatest construction era in history with the most productive machines ever developed.

NEW ON THE D7 SERIES D

TURBOCHARGED ENGINE features 9% horsepower increase, 80% more tractor lugging ability. Optional in-seat starting is available. The payoff . . . more production!

DRY-TYPE AIR CLEANER removes at least 99.8% of all dirt and dust from engine intake air during every hour. Cleaner can be easily serviced in 5 minutes. Filter element can be re-used. The payoff . . . economical, convenient maintenance and longer engine life.

SERVICE-FREE TRACK ROLLERS, carrier rollers and idlers are lifetime lubricated. New load-carrying design increases roller life. The payoff . . . longer life, no on-the-job lubrication shutdowns.

PRESSURE-LUBRICATED POWER TRAIN insures complete circulation of filtered oil to transmission, bevel gear and pinion. To transmit increased power, power train components have greater strength. The payoff . . . longer gear life, trouble-free operation.

CATERPILLAR

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BORN OF RESEARCH
PROVED IN THE FIELD

M-F Work Bull 1001 has instant reversing (without shifting), direct line thrust, 43° rollback, plus eight change-in-the-field attachments.

M-F – the FIRST to take the Right Approach to LIGHT INDUSTRIAL EQUIPMENT

Only M-F Work Bulls with Davis-engineered loaders, backhoes, and other attachments fill the bill for light industrial equipment with proven quality and customer acceptance.

They are specially designed for industrial use with many features found only in bigger, more expensive equipment.

The same machine and the same operator can do scores of jobs – trenching, backfilling, loading, clearing, lifting, material handling, or cleaning up – to keep your job rolling and your profits multiplying.

Because M-F rigs depend upon speed, maneuverability, and proper application of power instead of brute force and single-load capacity, they work circles around – and replace – costly, single-purpose machines in many cases.

Your Massey-Ferguson Industrial Dealer can help you select just the right power package for your operation – and he'll back it up with service. Write today for free literature and his name and address.

Work Bull 1001 Work Bull 303 with 500 Loader and Davis Backhoe Work Bull 202 with Davis Loader and Backhoe Work Bull Fork Lift

MASSEY-FERGUSON INDUSTRIAL DIVISION

1009 SOUTH WEST STREET • WICHITA 13N, KANSAS

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INDUSTRY NEWS

(Continued from page 50)

Lehigh Valley mills may ship cement by truck

AT LEAST SEVEN cement plants in Pennsylvania's Lehigh Valley are considering the possibility of shipping by truck. Two southeastern Pennsylvania trucking firms have recently applied to the Pennsylvania Public Utility Commission, which sets the boundaries within which trucks can operate in the state, for permission to haul cement from Lehigh Valley plants.

E. Brooke Matlack, Inc., of Philadelphia filed applications to handle six plants and Chemical Tank Lines, Inc., of Downington has the seventh application. They were filed during the first week in February.

Up to the present, practically no cement has been moving out of the area by truck. S. T. W. Green, president of the Lehigh & New England Railroad, which handles the bulk of cement shipments in the area, said his company would file a protest with the PUC and present supporting testimony when public hearings were scheduled.

After the filing of applications, a month usually elapses before hearings are scheduled by the PUC. A PUC spokesman said the burden of proof would rest with the applicant to show need for the proposed service. This would have to be supported by testimony of shippers. Opposing statements would be heard at the same time and several weeks would be required before a decision would be given.

Although truckers have made similar applications unsuccessfully before, cement companies which had resisted shipping by truck now are going along with the idea because many of their own customers are demanding it. Cement makers estimate they will have to spend money for new loading facilities to take care of trucks, however.

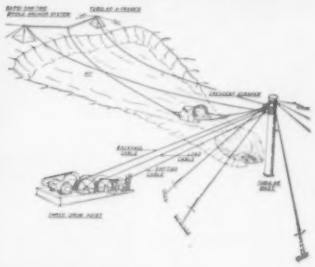
Last September the PUC allowed three trucking concerns to move into the Lehigh Valley area. Cement-hauling railroads appealed this to the state's superior court, and this appeal is still pending.

New Michigan firm

ARTICLES OF INCORPORATION have been filed with Michigan State Corporation and Securities Commission for Michigan Gypsum Co., Grand Rapids. Incorporators, all of Grand Rapids, are William G. Phelps, F. Roland Sargent, Robert J. DeLand and Catherine L. Gaus.

(News continued on following page)

Three Sauerman Methods for Cutting Excavating and Reclamation Costs



DIGGING and CONVEYING

Rapid Shifting DragScraper—Using a rapid shifting bridle system, a 4-cu. yd. DragScraper digs 200 cu. yds. per hour from an 80-acre gravel deposit. Rapid Shifter permits selection of desired sizes from various pit locations to obtain a proper mixture.

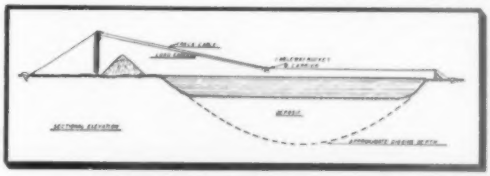
STORAGE and RECLAMATION

DragScraper—Clay reclamation from this 200-ft. storage shed is efficiently handled by a 1-cu. yd. DragScraper. From the controls of the Sauerman Hoist, the operator can reclaim to hopper from any part of the shed area. Winch at left provides power for lateral shifting of tail block and trolley on monorail.—*Sauerman News No. 140.*

UNDERWATER RECOVERY

Slackline Cableway—This cableway excavator is digging 50 ft. below water and delivering to a 60-ft. surge pile. Average haul is 600 ft. The slackline permits building a large stockpile due the height of discharge. (Drawing shows details of typical slackline installation.)

—*Sauerman News No. 141.*



Find out what the Sauerman Method can do for you

Give us details on your operation. Our engineers will give prompt recommendations and work with you to provide the best method for your requirements. Ask for Catalogs A (DragScrapers) and C (Slackline Cableways).

SAUERMAN BROS., INC. 630 SO. 28th AVE. BELLWOOD, ILL. Cable: CABEX—Bellwood, Ill

Crescent Scrapers • Slackline and Toutline Cableways • Durolite Blocks

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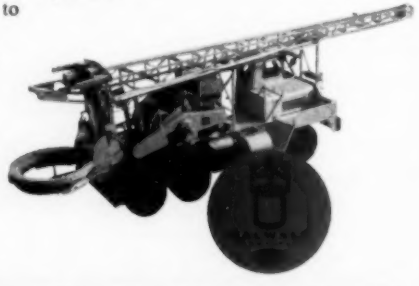
Calweld cuts aggregate exploration costs in half!

Gives you Big, easy-to-analyze samples!

Many users report Calweld Drills save up to 50% or more in providing large-scale samples quickly and efficiently. They furnish the most accurate overall picture of sub-surface conditions and deliver true samples as large as 48″ in dia. A Calweld can be operated by two men; drills a hole 45′ deep within an hour and can be transported easily from site to site.

With fast-boring Calweld equipment, exploration crews can cover large areas quickly to give accurate multiple sampling and to provide unusually complete depth-sizing charts.

Whatever the project and whatever the location, it will pay to investigate the time and money-saving features of Calweld Drills. They bore holes up to 10′ in diameter and 200′ deep. Write today for the new 16-page "Methods Manual."



CALWELD DRILLS

CALWELD, INC., 7222 E. Slauson Ave., Los Angeles 22, California

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INDUSTRY NEWS

(Continued from preceding page)

Gibsonburg Lime Products will add new kiln

W. H. PRICE, II, vice president of The Gibsonburg Lime Products Co., Gibsonburg, Ohio, announced that the board of directors has approved the installation of an additional rotary kiln that will produce 240 tons per day of dolomitic limestone.

Mr. Price said that this expansion will enable the company to better meet and supply present and future customer requirements, further diversify its sales through newly developing markets and release some present production for expanding building lime markets.

In addition to the rotary kiln, the installation will include stone-handling equipment and additional storage, preheater, cooler and complete grinding, screening and loading facilities. Target date for completion is October 1, 1959. Kennedy-Van Saun Mfg. & Engr. Corp. will act as engineers and furnish some major items of equipment.

Pavement yardage

AWARDS OF CONCRETE PAVEMENT for the month of December and for the calendar year 1958 have been classified by the Portland Cement Association as follows:

	Sq. yd. awarded during	
	December	1958
Roads	6,774,882	69,050,236
Streets and alleys	2,692,332	32,807,547
Airports	793,604	19,482,570
Totals	10,260,818	121,340,353

Florida Silica Sand opens new warehouse

A NEW BAGGED MATERIALS warehouse and bulk-graded aggregate yards have been opened in Miami, Fla., by Florida Silica Sand Co., Inc. According to Vic Keller, general manager of the company, a much larger inventory and an expanded line of specification blasting sand, graded aggregates and filter media will be stocked.

Correction

W. W. SLY MFG. CO. dust collectors are installed at the Lime Kiln, Md., plant of Alpha Portland Cement Co. This information was inadvertently omitted from the list of major equipment that appeared with our article entitled "Alpha builds new cement plant with low investment" (see ROCK PRODUCTS, January, 1959, Page 92).

(News continued on page 56)

AGGREGATE IS JUST SAND AND GRAVEL...

UNTIL WEMCO ENTERS THE PICTURE...

Today, you don't turn a sand and gravel deposit into real profits—unless you have a low-cost, volume operation—and a quality product!

So it is that so many operators turn to WEMCO for the shortcuts to sound, economical production. Through nearly 20 years' of experience in the aggregate industry, WEMCO has pioneered methods, engineered the equipment that consistently has been able to upgrade deposits to acceptable, marketable specifications. The WEMCO MOBIL-MILL, for example, is the first pre-fabricated, packaged heavy media separation plant, complete and ready for installation and operation; requires no additional labor, produces premium aggregate the first day! A complete line of other WEMCO EQUIPMENT for preparation, beneficiation and handling of aggregate, too, is available.

We'll be glad to furnish details on how WEMCO can work profitably for *you!*

A WEMCO man can give you details on getting the most out of your operation. Why not call him today?

WEMCO

a division of
Western Machinery Company, *Dept. R. P.*
650 Fifth St., San Francisco, Calif.
and throughout the world

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Make dust "taboo" ...in your plant!

Protect your equipment, your personnel and your community good will with

Norblo

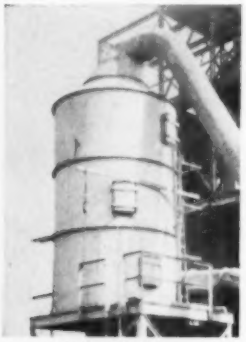
Dust and Fume Collection

Much has been done about air pollution during the last 40 years, but a new wave of awareness to its widespread dangers finds government authorities, scientists and businessmen searching for more efficient, more complete methods of controlling dust, fumes, smoke, and odors.

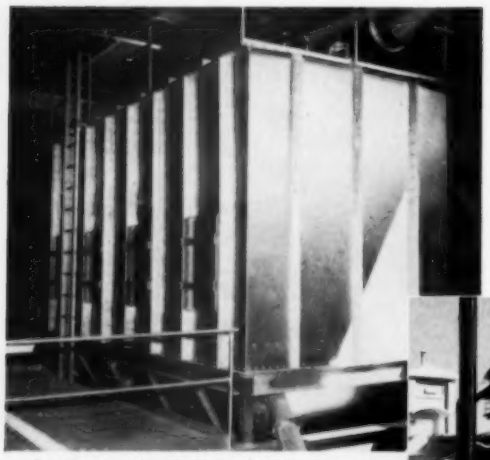
Norblo's experience of nearly 50 years in the removal of injurious industrial air contaminants has been extensive in most industries. The three major types of collectors illustrated are recommended for the work each is best suited to perform. High recovery at low operating and maintenance costs is assured by Norblo's careful application check and guarantee of performance. All components of Norblo collecting systems are made in our own shops, including the exhaust fans.

Ask your consultant about Norblo — or write the factory for full information.

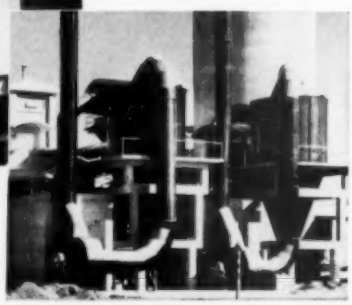
The Northern Blower Company
6408 Barberton Avenue • Cleveland 2, Ohio
Telephone OLympic 1-1300



Hydraulic Type



Bag Type — Automatic and Semi-automatic



Centrifugal Type

Norblo ENGINEERED DUST COLLECTION SYSTEMS FOR ALL INDUSTRIES

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INDUSTRY NEWS

(Continued from page 54)

Package lease announced for rock, cement industry

A SPECIAL PACKAGE LEASE plan for the rock and cement industry has been announced by Nationwide Leasing Co., Chicago, Ill., under which any combination of equipment may be considered one package and leased as a unit for three to five years.

According to Robert Sheridan, Nationwide president, the package lease permits large and small firms to acquire $10,000, $25,000, $50,000 or more in equipment without need for capital investment.

Under the Rock and Cement Package Lease, a company could lease $10,000 worth of equipment for three years for a monthly payment of $320. The $25,000 package lease would cost $800 monthly for three years, $625 monthly for four years. A $50,000 package lease features three, four and five-year terms. Three-year leases would cost $1,600 monthly; four years, $1,250; five years, $1,050.

Greenacres Gypsum Co. starts production

GREENACRES GYPSUM CO., INC., was scheduled to start production at its Greenacres, Wash., plant in February. The plant produces agricultural gypsum and limestone.

Greenacres Gypsum purchased the plant from Western Gypsum Co., Ltd. Wesley Wickland, plant manager, said an additional $25,000 worth of equipment for grinding gypsum and limestone and for custom mixing of fertilizers has since been installed.

January pavement yardage

AWARDS OF CONCRETE PAVEMENT for the month of January, 1959, have been classified by the Portland Cement Association as follows:

	Sq. yd. awarded
Roads	4,774,860
Streets and alleys	2,113,649
Airports	2,075,893
Total	8,964,402

Bestwall Gypsum Co. buys Michigan property

BESTWALL GYPSUM CO. has acquired title to 175 acres in Grand Rapids, Mich., for the building of a plaster mill and establishment of a gypsum mine. The plan for the industry had been under litigation the last four years.

(News continued on page 59)

Enter 1411 on Reader Card

Loads 5-yard truck in 35 seconds!

Caterpillar No. 977 Traxcavator is top producer under tough conditions in Texas quarry

HEAVY dust and large chunks make loading blasted limestone difficult at the San Antonio, Texas, quarry of the Kelly Construction Co. The crusher produces 100 cu. yd. per hour of 2-in. limestone for road base. Production is paced by a Cat No. 977 Traxcavator. It loads a 5-yd. truck in 2 passes, in about 35 seconds.

"The Cat No. 977 Traxcavator has given us power, performance and stability," says B. F. Lovelace, secretary-treasurer. "It lives up to its reputation—and then some!"

One of the big reasons why the No. 977 can set and hold such a money-making pace is this: It's built from the ground up as a loader-excavator; not just a tractor with a bucket. Good traction with plenty of power means a full load in the 2¼-yd. bucket at every pass.

Besides the 100 HP No. 977, there are two other Cat-built Traxcavators: the 52 HP No. 933 (1⅛-yd. bucket) and the 70 HP No. 955 (1½-yd. bucket). All have such features as: triple-grouser track shoes, rugged track frame, spool-type valves, excellent operator comfort and visibility, all-weather gasoline starting engine, and exclusive oil clutch.

Ask your Caterpillar Dealer to demonstrate a Traxcavator on *your* job. He will make the kind of a deal that will return a profit to you.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

FIND YOUR CATERPILLAR DEALER IN THE YELLOW PAGES

Available on the No. 977 is a Side Dump Bucket attachment (2¼ yd.). It dumps to the left as well as forward, and is directly interchangeable—same pins, bolts, nuts—with the standard bucket.

CATERPILLAR

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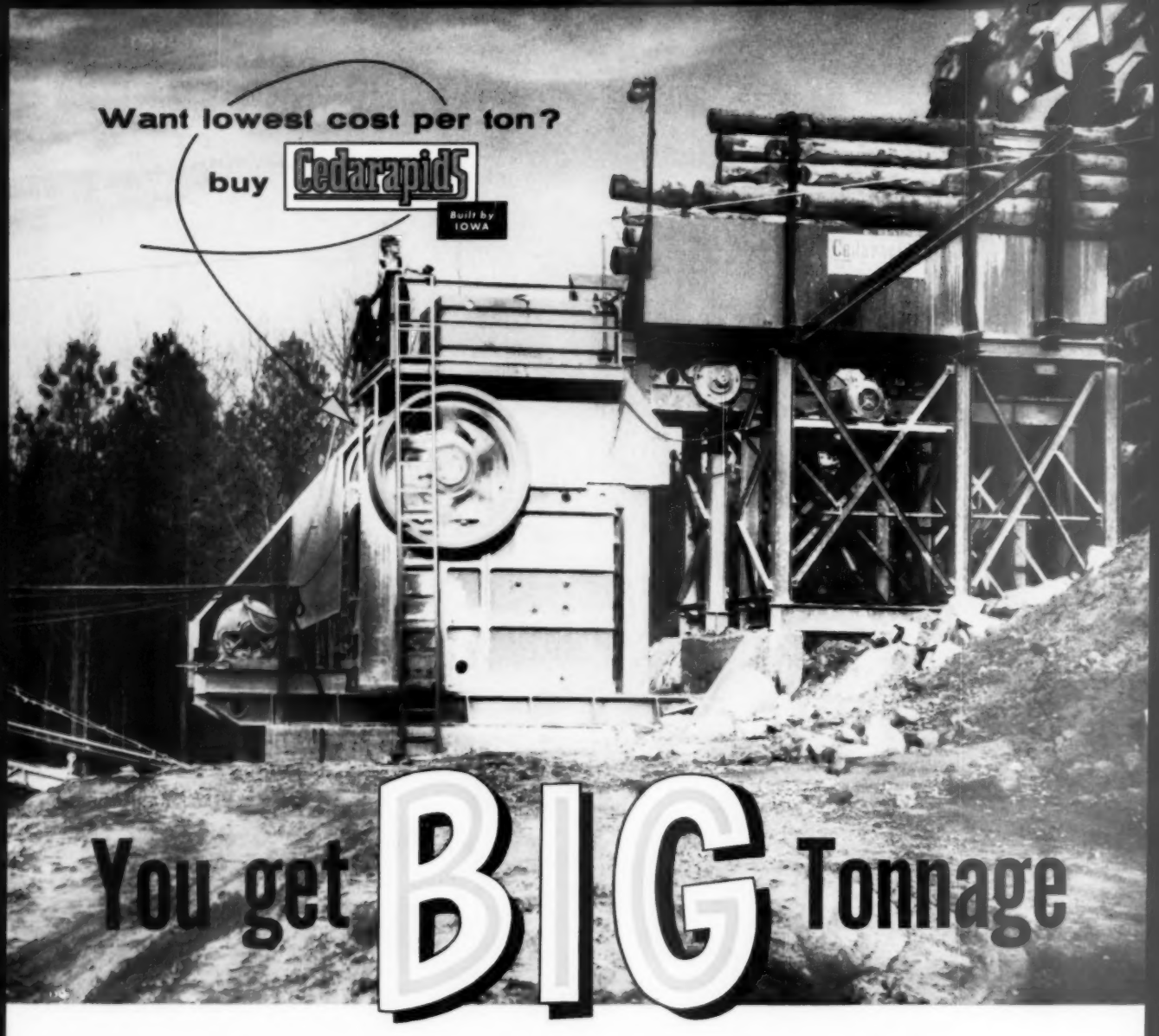
HARD-WORKING, LONG-LASTING LOADER VERSATILITY



with Cedarapids 42" x 48" Jaw Crushers

Here's the way to handle your *big* primary crushing jobs profitably. This Cedarapids 42" x 48" Jaw Crusher will take a piece of solid rock weighing over 6,250 lbs., reduce it to 4" minus material, and turn out 200 tons per hour! It will produce up to 775 tons per hour of 15" minus. In the installation shown above, owned by Clement Brothers Co., Pomaria, South Carolina, the primary jaw crusher is stock-piling material ranging in size from 5½" to 6". Material is then conveyed to a Cedarapids 5' x 12' Double-Deck Inclined Screen, two Cedarapids Horizontal Vibrating Screens and two cone crushers used for secondary crushing of oversize from the screens. The plant easily handles 300 tons per hour and the primary jaw crusher keeps it going full blast. A high-output, low-maintenance operation like this makes money!

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa

Gentlemen: Please send Bulletin JC-1 and more information about the BIG 42" x 48" Jaw Crusher.

Name_____ Title _____

Company _____

Address _____

City_____ State_____

Get complete details about the greatest combination of high-capacity features ever built into a jaw crusher. Ask about the precisely engineered overhead eccentric, balanced force-feed design; extra power with heavier-than-average flywheels; hydraulic rams for fast size adjustments; rigid, stress-relieved base fabricated with heavy rib-reinforcements; the *many* other low-maintenance, big-production features.

IOWA MANUFACTURING CO.
Cedar Rapids, Iowa

INDUSTRY NEWS

(Continued from page 56)

Permanente establishes Guam distribution plant

PERMANENTE CEMENT CO. has established a cement distribution facility on the western Pacific island of Guam. The plant, located near Apra Harbor on land leased from the navy, will supply a substantial and growing market in military and civilian construction in the years ahead.

The $250,000 plant will have a storage capacity of 60,000 bbl. of cement, and will be equipped to provide both bagged and bulk cement. Cement will be shipped to it directly from Permanente shipping facilities at Redwood City or Long Beach, Calif. First shipment from Redwood City arrived early in February.

Batavia, N.Y., firm buys new equipment

MECKUM ENGINEERING, INC., has been awarded contracts by Batavia Washed Sand & Gravel Co., Inc., Batavia, N.Y., to furnish equipment for new sand and gravel processing facilities to supplement present operations.

The new equipment includes an 8-in. all-steel hydraulic dredge with a 65-ft. heavy-duty chain-type cutter ladder, a jig for beneficiation of 50-60 tph. of gravel and a 120-tph. automatic sand classifying system. Operation of the new facilities is scheduled to begin this spring.

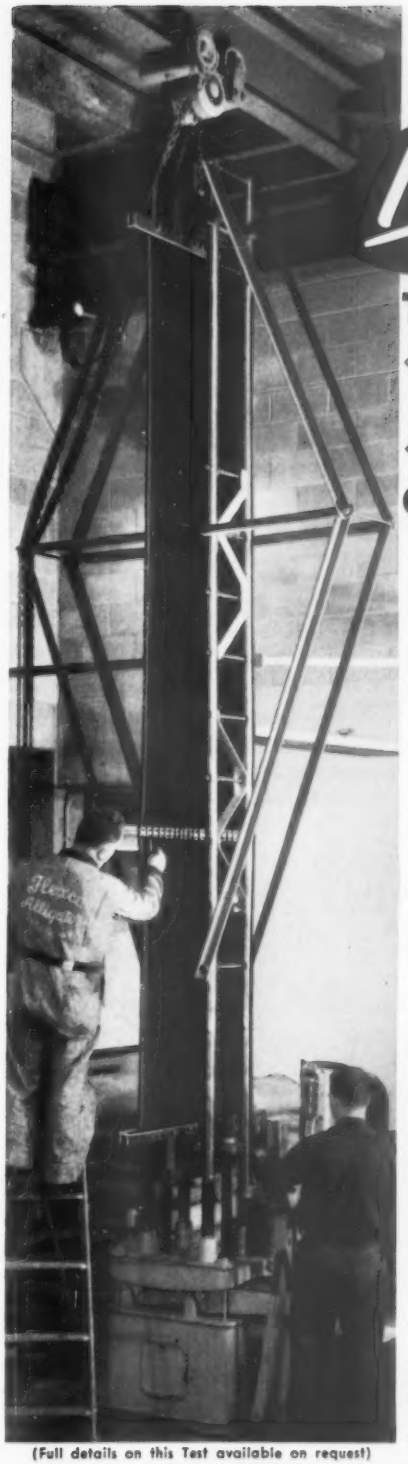
Gypsum mountain found in Oklahoma

THE DISCOVERY OF a mountain of agricultural gypsum near Binger, Okla., has been announced. V. C. Hatley, owner and discoverer, reported he located the gypsum supply last April but only recently opened it to operations after leasing the land. He estimated that the mountain contains a million tons of gypsum. The gypsum is being mined with bulldozers and drag-scrapers.

Lime company marks centennial

M. J. GROVE LIME CO., Lime Kiln, Md., is celebrating its 100th anniversary this year. Other lime companies who have chalked up their 100th continuous year in business include G. & W. H. Corson, Inc., Plymouth Meeting, Pa., and the Warner Co., Philadelphia, Pa.

(News continued on following page)



IT TOOK A 17 TON PULL TO BREAK THIS

FLEXCO®

CONVEYOR BELT SPLICE!

MORE THAN 3 TIMES THE STRESS PLACED ON MOST OPERATIONAL BELTS!

Tests such as this, using belts of various sizes and construction, are part of Flexible's continual effort to improve fastener design and performance.

FLEXCO—THE PREFERRED FASTENER BY BELT MAINTENANCE CREWS! Holding power . . . ease of application . . . wearability — thoroughly tested before they ever reach the user.

QUALITY FEATURES OF THE FLEXCO DESIGN . . .

Plates have special cupped ends on top and bottom . . . distribute the strain over entire plate area.

Teeth are spaced for best holding action.

Precision-made bolts and nuts.

FOR SPLICING, and REPAIRING RIPS and TEARS . . . ON NEW and WORN BELTS!

(Full details on this Test available on request)

ORDER FROM YOUR DISTRIBUTOR, OR WRITE TO US FOR BULLETIN F-112.

"FOR THE SPLICE OF A LIFETIME"

Flexible STEEL LACING COMPANY

4684 LEXINGTON STREET • CHICAGO 44, ILLINOIS

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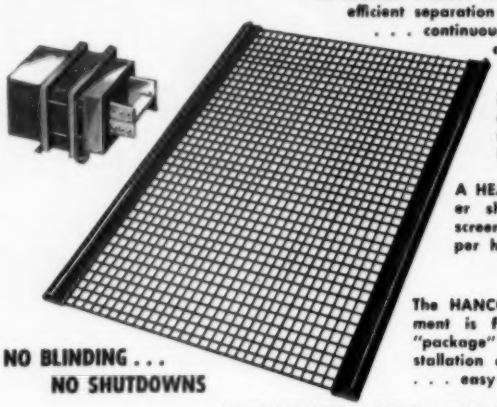
SCREEN MORE TONNAGE PER HOUR
with Hanco ELECTRIC SCREEN HEATERS

A HEATED SCREEN remains open . . . permits efficient separation of materials at all times . . . continuous operation possible day after day



Faster screening is assured since fine moist materials will not adhere to HEATED SCREENS

A HEATED SCREEN means fewer shutdowns . . . longer screen life . . . more tonnage per hour and thus . . .
HIGHER PROFITS

The HANCO screen heating attachment is furnished as a complete "package" . . . an average installation consists of only 5 PARTS . . . easy and quick to install

NO BLINDING . . .
NO SHUTDOWNS

HANCO ELECTRIC SCREEN HEATERS are adaptable to virtually all woven screens and can be quickly attached to new or existing single or multiple-deck vibrating screen installations. HANCO models meet all capacity requirements and are ideal for heating either stainless or tempered steel cloth. Your inquiry will receive prompt and effective attention from our experienced engineers whose recommendations will assist you in increasing production and reducing screening costs.

WRITE TO
F. R. HANNON & SONS
1605 Waynesburg Rd. SE., Canton 7, Ohio
CABLE ADDRESS: HANCO

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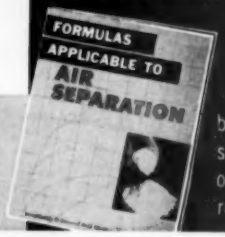
USING SCREEN SEPARATIONS?
NOTHING CLASSIFIES AS
PERFECTLY AS AIR

GAYCO
CENTRIFUGAL
AIR
SEPARATORS

Classify practically all dry fine materials

You get:
- CLOSER SEPARATIONS
- IMPROVED PRODUCTION
- NO UNDESIRABLE OVERSIZE.

RANGE 60 to 400 mesh.
Timken bearings.
Choice of Standard or Heavy-Duty Models.



this helpful booklet sent on request

Robert M. Gay Division
UNIVERSAL ROAD MACHINERY CO.
117 Liberty St., New York 6, N. Y.
Factory and Laboratory: Kingston, N. Y.
In Canada: Watson-Jack Hopkins Ltd., Montreal

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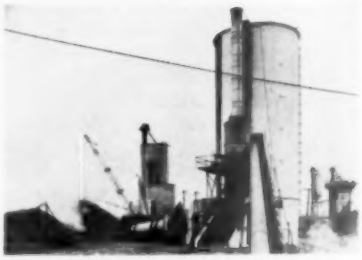
INDUSTRY NEWS

(Continued from page 59)

Texas Industries gets Dallas Lightweight



Dallas Lightweight plant

DIRECTORS OF Dallas Lightweight Aggregate Co. have voted to sell all assets of the company to Texas Industries, Inc., through an exchange of stock. Holders of Dallas Lightweight stock will receive three shares of Texas Industries common stock for every four shares of Dallas Lightweight.

The plan of reorganization was subject to approval of Dallas Lightweight stockholders, who were to meet February 20. Texas Industries owns 51 percent of Dallas Lightweight stock.

Dallas Lightweight Aggregate Co., established in Dallas in 1952, is the largest producer of lightweight aggregate in the North Central Texas area. It will continue to do business under the original name and with the same management and personnel.

Flintkote to acquire Blue Diamond Corp.

THE BOARDS OF DIRECTORS of The Flintkote Co., New York City, and the Blue Diamond Corp., Los Angeles, Calif., have approved a plan of reorganization under which the business of the West Coast gypsum producer will be pooled with that of Flintkote.

Blue Diamond Corp. was organized in 1931. It operates a gypsum mine and mills near Las Vegas, Nev., and is engaged in the sand and gravel business in southern California, as well as operating eight concrete batching plants and a reinforcing steel fabricating plant at Los Angeles.

American Potash builds Mississippi plant

CONSTRUCTION HAS BEGUN on the new $5 million plant of American Potash and Chemical Corp. at Hamilton, Miss., which is scheduled to begin production of some 15,000 tons of sodium chlorate a year by October 1.

(News continued on page 65)

PROVED AND PREFERRED...

Timken-Detroit Axles are the Accepted Standard!

Timken-Detroit Heavy-Duty Tandems Are First Choice With Big Off-Highway Operators!

These superior features make the difference:

"Cradle Ride" Suspension. Free ends of long, resilient springs float in axle spring guide brackets. This permits axles to articulate freely, compensating for road irregularities. Floating springs cradle the vehicle, materially reducing road shock and eliminating source of vehicle flutter. *The load is more stable . . . driving is easier, more restful, safer.*

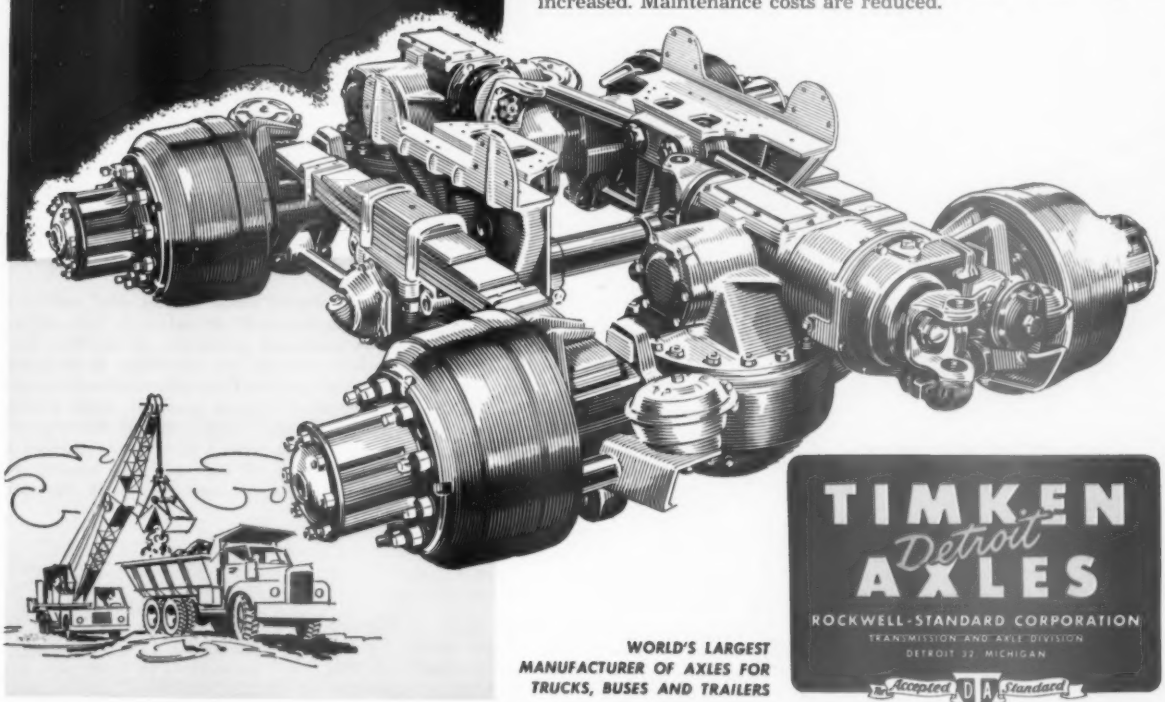
Hypoid Gears. Larger pinions and greater tooth contact give 30% more torque capacity, top efficiency and long life . . . *plus lower maintenance costs.*

Driver Controlled Inter-Axle Differential. Torque is divided equally between axles, yet wheels of one axle can turn faster or slower than wheels of other axle. This means both axles are always doing equal amounts of work. *Driving parts and tires last longer.*

Hot Forged Rectangular-Shaped Axle Housings. Rectangular shape, combined with full strength corner sections, provides the greatest strength with minimum weight and size. Welded-on bowl cover prevents leakage.

Torsion Flow Axle Shafts. More splines, plus greater root and body diameter, add extra strength.

Straight-Line Through Drive. Straight through drive eliminates all prop shaft angularity. Bearing and gear life is materially increased. Maintenance costs are reduced.



WORLD'S LARGEST MANUFACTURER OF AXLES FOR TRUCKS, BUSES AND TRAILERS

TIMKEN Detroit AXLES
ROCKWELL-STANDARD CORPORATION
TRANSMISSION AND AXLE DIVISION
DETROIT 32, MICHIGAN
The Accepted DA Standard
TRADE MARK REGISTERED

Products of **ROCKWELL-STANDARD** Corporation

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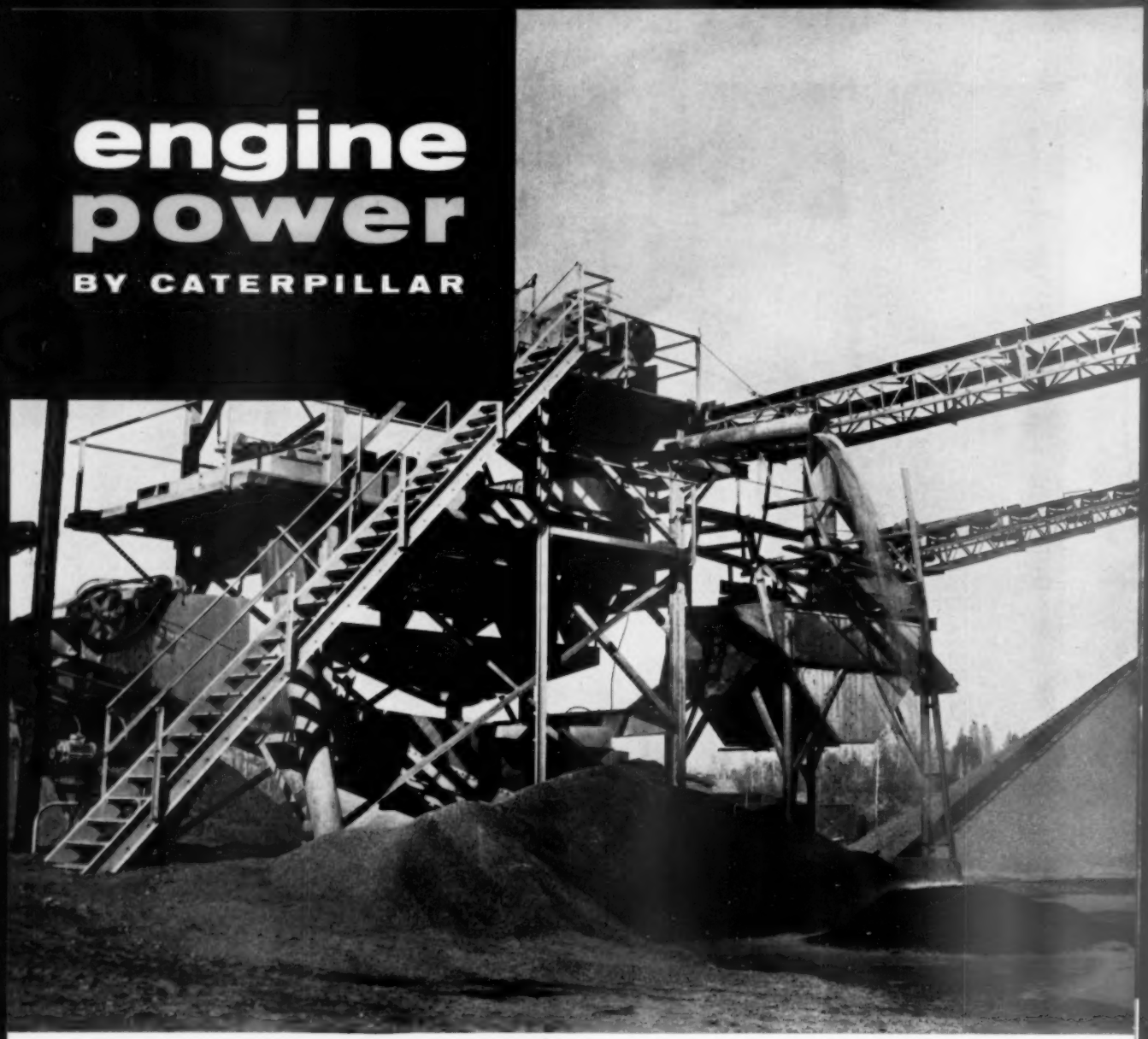
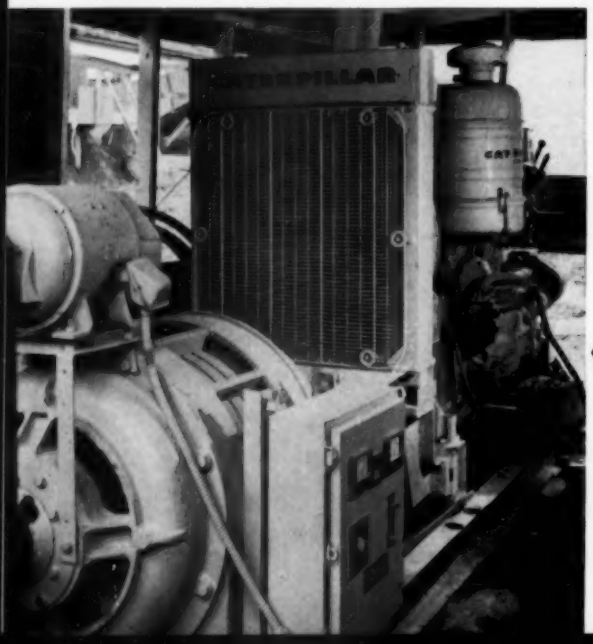
engine power

BY CATERPILLAR

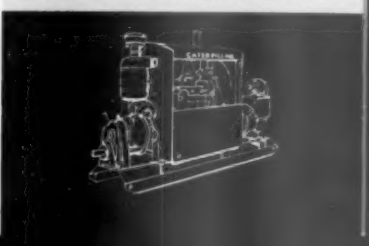




Arrowhead Sand and Gravel replaced three diesels and one gas engine with this Cat D353 "Two-Handed" Diesel with belt pulley drive. The 1-for-4 substitution increased production of washed material from 85-90 yd. per hour to 120-125 yd. per hour. Arrowhead is one of the largest aggregate plants in the Duluth-Arrowhead regions of Minnesota. The Cat "Two-Handed" Engine provides direct power for an 18 x 36 inch Universal jaw crusher, a 24 x 42 inch Pioneer roll crusher, electrical power for ten motors from 1 to 60 HP, including a 60 HP motor on a Cedarapids 100 x 42 inch scalping screen. In addition, this power package supplies current for plant lighting.

This is all the room Arrowhead Sand and Gravel needs for the Cat D353 "Two-Handed" Set. You don't need any elaborate shelter with Caterpillar Engines because air, fuel and lube oil are all filtered to keep microscopic abrasive particles from getting into engine. 100% filter protection is standard—at no extra cost . . . provides longer, trouble-free life, cuts down time.

Nine basic Cat "Two-Handed" Engines range in size from the 650 HP (maximum output rating) D397 to the 75 HP D311 (Series H) . . . are matched with generators to meet your needs.



How one Cat "Two-Handed" Diesel replaced four engines

"When an engine can run the entire plant with direct drive from one end and power a large generator from the other, the engine must have built-in mechanical and engineering superiority."

—Con Robertson, President
Arrowhead Sand and Gravel
Duluth, Minnesota

Four engines were at work on Con Robertson's washing plant near Duluth. Performance and production were limited by lack of power on the primary crushers. The obvious answer was to put a larger engine on this vital jaw and roll combination.

Instead, Arrowhead installed just *one* Cat D353 "Two-Handed" Engine to replace three diesels and a gas engine. Production rose by 40 yards per hour. Efficiency went up when the power source was concentrated in one package.

There are *nine* basic Cat Engines capable of transmitting 100% power off either end of the crankshaft. They can be matched with clutch, transmission and generator to exactly match your plant mechanical-electrical requirements. The transmission or clutch can drive jaw and drum crushers through simple, direct connections. Electrical power from the generator can allow better control of screens and belts for an even flow of material.

Cat "Two-Handed" units are compact and portable. You can mount them easily on trucks away from dust and vibration. Their fast governor response makes them a natural for crusher jobs.

You can save money by taking power off both ends of a single crankshaft. Call your Caterpillar Dealer today to receive the advantages of a Cat "Two-Handed" Engine installation on your job.

Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co

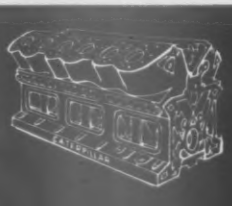
For further information send for booklet, "Now for Top Crusher Production"

Cat Crankshafts are made from pre-tested steel drop-forgings, with journal surfaces "Hi-Electro" hardened to *last*. Rifle-drilled crankshafts carry oil under pressure from journals to crank pins and bearings.

Your Caterpillar Dealer Engine Specialist is your diesel power consultant. He's backed by quality parts, reasonably priced, and a skilled staff of factory-trained servicemen. Call him now to avoid problems later.

Caterpillar's own foundry casts engine blocks of a special high-tensile strength alloy, 50% stronger than ordinary gray iron castings. Further rigidity and strength are provided by numerous ribs and partitions.

CDES



"DREDGE WAS EQUIPPED with the WRONG PUMP"

Dredge of Rock River Ready Mix, now equipped with modern Thomas pump, operating on Rock River, Dixon, Illinois.

George W. Lindquist — E. G. Lindquist

Rock River Ready Mix

DIXON, ILLINOIS

PLANT LOGAN AVENUE AND ROCK RIVER
OFFICE 205 BRINTON AVENUE
TELEPHONE

January 15, 1959

Thomas Foundries, Inc.
P. O. Box 111
Birmingham, Alabama

Gentlemen:

In 1954 we bought a dredge to produce sand and gravel from the Rock River. However, after two years it was realized that the dredge was equipped with the wrong pump.

In 1957 we bought a Thomas DURABLE Pump for our dredge and this was the answer to our problem. This has proven to be a very excellent investment.

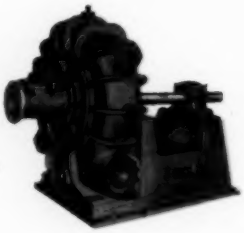
No more do we have to shut down every month (and sometimes in between) for major repairs and overhaul. We now get steady, increased, and uninterrupted production which we badly needed.

Surprisingly the Thomas Pump gives us a full year of production without repairs or downtime.

Sincerely yours,

ROCK RIVER READY MIX
Robert O'Bryant, Manager

"ANSWER TO OUR PROBLEM WAS A THOMAS Durable PUMP"



Times change. Everything changes—even dredge pumps. Design and materials used in sand and gravel pumps 20-30 years ago are out-of-date today. Those pumps may have been all right in 1930 because no one then knew how to make a better one.

The great enemy of a dredge pump is abrasion. The way to beat abrasion is a modern product of the metallurgical laboratory known as GENUINE, dependable Thomas Ni-Hard alloy. That's what Thomas Dredge pumps are made of. And, coupled with improved design, that's the key to the long life and low maintenance costs of modern Thomas pumps.

The key to increased sand and gravel production of a Thomas pump is its improved design which gives higher efficiency and steady, uninterrupted operation over long periods without downtime for repairs, replacements or adjustments.

Rock River Ready Mix was using the "Pre-Thomas" kind of pump. Read their letter and see what happened when they replaced it with a Thomas—the modern dredge pump.

[Thomas DURABLE Dredge pumps are manufactured in range of sizes from 6" to 16" discharge. Rock River Ready Mix is using a Thomas Series JL, 10" suction, 8" bottom right-hand discharge.]

THOMAS FOUNDRIES Inc.
P. O. Box 1111, Birmingham, Alabama

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INDUSTRY NEWS

(Continued from page 60)

Safety Council section's executive committee meets

A MEETING OF THE National Safety Council's Cement, Quarry & Mineral Aggregates executive committee was held in January at the Sheraton-McAlpin Hotel, New York City. General Chairman Paul Worseck, Lehigh Portland Cement Co., presided.

Committee chairmen made progress reports covering 1958 as well as prospects for 1959. Preliminary plans were made for the program to be presented at the next National Safety Congress, which will be held in the fall of 1959. Discussions were held regarding safe practices in the use of blasting agents and conveyors. A program of off-the-job safety was also explored.

The executive committee's next meeting will be held in May in Washington, D.C. At this time the program for the National Safety Congress will be finalized. **END**

Calendar of Coming Conventions

1959

April 6-8, 1959—
National Lime Association, Annual Convention, Homestead, Hot Springs, Va.

April 15-16, 1959—
American Institute of Electrical Engineers, Conference on Cement, Americus Hotel, Allentown, Pa.

April 23-25, 1959—
Texas Aggregates Association, 5th Joint Annual Convention With TRMCA, Shamrock Hilton Hotel, Houston

May 17-19, 1959—
Empire State Sand, Gravel and Ready Mix Association, 8th Annual Convention, Sheraton-Brock Hotel, Niagara Falls, Ontario

June 8-9, 1959—
National Agricultural Limestone Institute, Mid-Year Meeting, Sheraton-Blackstone Hotel, Chicago, Ill.

June 8-9, 1959—
National Crushed Limestone Institute, Mid-Year Meeting, Sheraton-Blackstone Hotel, Chicago, Ill.

June 17-20, 1959—
Expanded Clay & Shale Association, Mid-Year Meeting, New York, N.Y.

June 21-26, 1959—
American Society for Testing Materials, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N.J.

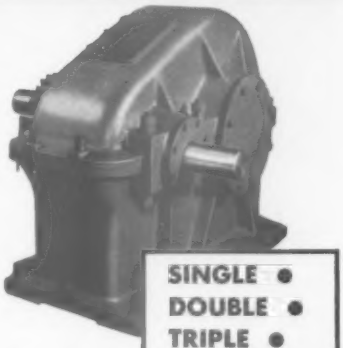
September 13-18, 1959—
American Society for Testing Materials, Third Pacific Area National Meeting, Sheraton Palace Hotel, San Francisco, Calif.

September 14-17, 1959—
American Mining Congress, Metal Mining-Industrial Minerals Convention, Denver, Colo.

September 27-30, 1959—
National Sand and Gravel Association, Semi-Annual Meeting, Board of Directors, Lake Placid Club, Lake Placid, N.Y.

Continuous Tooth

HERRINGBONE GEAR SPEED REDUCER



The Gear with the Backbone •

Proven On-the-Job Advantages of This Type of Gear Reduction

1. No side thrusts, avoidable deflections, distortions, impact stresses.
2. Stronger teeth, due to archlike construction.
3. Greater load carrying capacity.
4. More silent and smoother gear action.
5. Uniform load across face due to balanced thrusts of opposing helices.
6. Better lubrication, due to wedge action of teeth.
7. Overall design makes it less costly to produce.
8. Can be substituted for straight tooth gears.

We have extensive facilities for making Herringbone Gears, producing them from 1" to 60" in diameter, 16 DP to 1½ DP and up to a 20" face.

YOUR GEAR INQUIRIES WILL RECEIVE PROMPT ATTENTION FROM US.

SEND FOR CATALOG 40

ESTABLISHED 1888

D. O. James

D. O. JAMES GEAR MANUFACTURING CO.
1140 W. Monroe Street, Chicago 7, Ill.

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Chevy power is tough—

and proves it on bruising off-the-road hauls!

That Series 100 Chevy tandem above takes a terrific pounding as it hauls huge loads of gravel or fill dirt into the heart of California's redwood country. It goes miles off the road, makes up to 24 trips a day through rocky forest land. Yet owner Bernard Conti, of the Conti Sand & Gravel Company, reports only one hour of downtime in 20,000 miles on this truck-killing road construction job. And Chevy's tough power gets the truck through faster, Mr. Conti says; assures more trips—more profits—per day!

Hauling outsized loads of fill dirt through California's forests calls for a heavy-duty truck that's rock-rugged and powerful as they come; one that's soundly built down to the last bolt. And the Conti Sand & Gravel Company bears witness to the fact that Chevrolet is just such a truck. They're completely satisfied with their Series 100 model, from the dependable pulling power of the big 230-h.p. Workmaster V8 to the work-whipping qualities of the tough-built chassis components. And you'll be equally satisfied with whichever Chevy heavyweight or middleweight *your* work requires!

Mr. Conti indicates that Chevrolet's Powermatic* transmission is of special importance in this rugged service. It helps him to bull through the tough spots with exceptional ease. This fully automatic 6-speed transmission virtually eliminates manual gearshifting! It also provides a Hydraulic Retarder that helps you control truck speed and saves wear on the service brakes.

**Optional at extra cost, Series 50, 60, 70, 80, 90 and 100 models.*

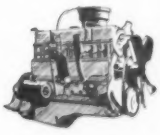
No job's too tough for a

Chevy's powered to cut costs and keep going on your tough off-the-road hauls!

That's for *sure*, whether you use mighty middleweights or high-capacity heavyweights—whether you prefer V8's or 6's.

Take Chevrolet's 1959 big-truck V8's, for example. As indicated by that tough truck job pictured above, these modern engines are out to whip any work that comes their way. They've got what it takes to do it. The *shortest piston stroke* of any comparable truck V8's: a sure sign of more work on less fuel. Compact design that cuts down on truck weight and helps assure the biggest possible payloads. Scores of up-to-the-minute features that know how to trim overhead: full-flow oil filter, hydraulic valve lifters, hard-faced exhaust valves and hardened valve seats, extreme-duty Moraine 400 bearings, rotor-controlled governor, overspeed warning light and many more.

And with a *complete* lineup of modern V8 powerplants —including 160-h.p. Trademaster, 160-h.p. HD Taskmaster, 175-h.p. HD Super Taskmaster, 185-h.p. Workmaster Special and 230-h.p. Workmaster—Chevy can match the engine to your work, ideally.



Or if you prefer 6's, Chevy's *still* your best bet. Standard in Series 40 models is the 135-h.p. Thriftmaster 6, better than ever for '59 with a new Economy-Contoured camshaft that improves gas economy by 10%! And in Series 60 there's a new edition of the 150-h.p. Jobmaster 6. It offers new durability stemming from new tougher built pistons and Stellite-faced exhaust valves. Both of these famous 6's provide plenty of hard-pulling torque.

Six or V8, you'll go a long way before you see the likes of this '59 Chevy engine lineup. Actually, there's only one *best place* to go for all your trucking needs —and that's to your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Chevrolet truck! CHEVROLET

Enter 1469 on Reader Card

HINTS AND HELPS

Profit-making ideas developed by operating men

Reclaim system serves many trucks at once

THERE ARE TWO SCHOOLS of thought on how to build a reclaiming tunnel system to achieve greatest efficiency at lowest cost. One school of plant layout and design advocates piling the different materials over a single long reclaim tunnel. Gates under the pile of each different size serve the single belt conveyor in the tunnel. This system has several advantages, particularly in first cost, and more so when blending must be achieved.

The second system is to have a tunnel, gates and belt conveyor under each pile of material. While there is the cost of providing a number of tunnels, there is a definite advantage in being able to load out a number of trucks at the same time. A western producer used this system since it was imperative that more than one size of material be shipped at all times, and blending was not a controlling factor. He realized, too, that there was some saving in labor when a truck driver was able to load and trim his truck without assistance.

Big sled, no dogs

THIS BIG SLED IS USED in Florida where the ground is soft and the going is rough. There this movable platform is practically indispensable to keep heavy electrically operated equipment working at top efficiency at all times.

When this big equipment works fast, it depletes wide areas of shallow deposits in a hurry and the machinery must be moved. Part of the credit for moving quickly and easily must be given to the movable platform, which holds plenty of trailing cable and a number of receptacles for making electrical connections. There is no need to drag long lengths of heavy power cable along rough ground, and the receptacles make it easy to plug in equipment when it is ready for work again.

Tailings control

CONTROL OF REJECTS from mines and mills in the west is an old, well-established art. One of the newer wrinkles has been developed by a large copper milling operation, but since their waste closely resembles that from almost any washing plant in the rock products industry, their system is worth looking at.

Here at this operation a pond with a dike over a mile long retains the waste pulp from the mill. The dike, over 60 ft. wide, is maintained using the coarser sand from the mills. A 12-in.-diam. asbestos-concrete pipe with spaced outlets is mounted on top of a 6-ft.-high, L-shaped frame.

Corrugated metal sheets are used to divert the flow of pulp toward the "upstream" side of the dike. As pulp flows out of the pipe, the heavier sands drop out quickly to form the next upward step in the dike.

Once a year the whole assembly is moved, and elevated if necessary, to build another section of the dike. Eventually, the whole dike becomes solid and stable. Then it is surfaced with a small amount of gravel to serve as a road to the end of the dike.

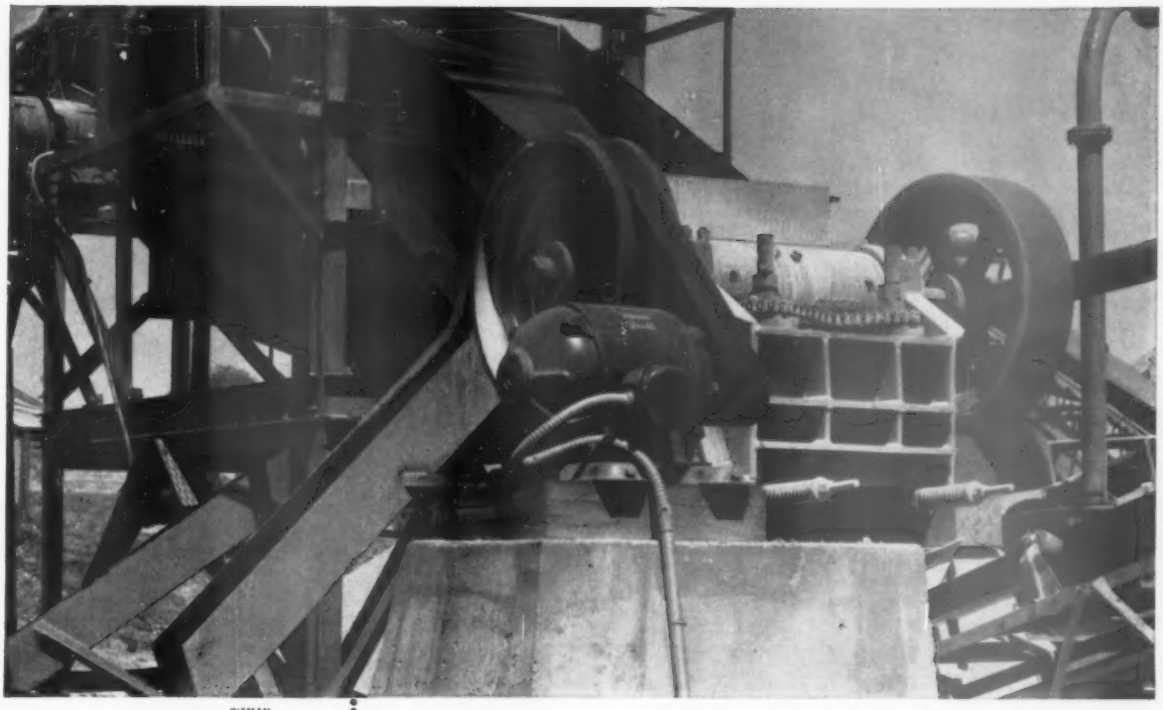
The asbestos-concrete pipe has proven to be ideal for this service. It is lightweight with high strength, can be cut, sawed or bored, and has given good resistance to abrasion and corrosion when handling this mill's waste.

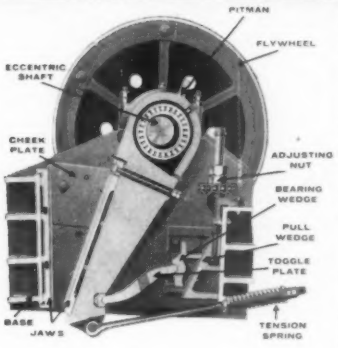
Keep your clinker dry and safe from weather

DURING THE SLOW SELLING season during 1958 a midwestern cement manufacturer accumulated a 56,000-ton surplus of clinker in an outdoor storage pile. To insure that the clinker would pick up a minimum amount of moisture during winter weather, the company covered the entire three-quarter acre pile with a sheet of polyethylene film.

This process required about 80,000 sq. ft. of 4-mil black film which was supplied in 20-ft.-wide rolls. The strong, durable film was held in place with scrap lumber which kept the cover in position even during strong winds. When the clinker was reclaimed for finish grinding, it was found that the moisture content was substantially below other clinkers stored in unprotected piles — amply justifying the extra expense and effort.

(Continued on page 70)





A Key unit for full time peak performance

DIAMOND JAW CRUSHER

Whatever the set-up and no matter how rugged the job, Diamond's "long-jaw" handles hardest rock with ease . . . day in, day out. A positive and uniform crushing cycle combined with quick jaw openings permits fast feed and discharge, insures full time peak performance . . . superior crushing records.

Diamond's Jaw Crushers are built to take it! The Pitman operates on a heat treated, forged alloy steel shaft and supports the moving jaws. Extra long and made of manganese steel, the jaws are easily changeable and reversible for longer service. A *double row* of adjustable Timken bearings for both main and Pitman bearing assemblies carries the heaviest radial and thrust loads—a Diamond exclusive.

Records in hundreds of pits, quarries, construction jobs, prove that Diamond Jaw Crusher is a top performer. Its ability to take rough punishment and to produce greater tonnage per square foot of jaw area make it a profitable investment. If it's your responsibility to produce continuous tonnages and see that aggregate production costs are kept down, you'll want complete details on Diamond Jaw Crushers. Write for Catalog D-116 . . . no obligation.

Diamond Jaw Crushers in 11 Sizes

Capacities 1½ to 500 tons per hour

6x12	10x36	24x36
10x16	15x24	30x42
10x20	15x36	36x48
10x24	20x36	

Diamond makes everything for the aggregate producer:

Jaw Crushers • Roll Crushers • Conveyors • Screens and Washers • Feeders and Bins • Portable and Stationary Crushing Plants for Rock and Gravel.

DIAMOND IRON WORKS

DIVISION

GOODMAN MANUFACTURING COMPANY

Halsted Street and 48th Place • Chicago 9, Illinois

Enter 1470 on Reader Card

HINTS AND HELPS

(Continued from page 68)

Emergency hose clamp

DID YOU EVER FIND yourself in the middle of a job fixing a water line with a broken hose clamp and no time to go down to the nearest hardware store for another—even if there *is* a hardware store nearby?

Enterprising mechanics we know have no trouble getting out of this predicament. They simply take a piece of galvanized sheet or tinned gasket sheet and cut a strip of suitable width and length to match the old clamp. The strip is wrapped around the hose, a pair of holes is punched to suit a small bolt and the whole assembly is tightened.

It may not be equal to some of the shiny stainless steel hose clamps now available, but it certainly does the job. Incidentally, we notice that more and more service stations and garages are carrying clamps suitable for many kinds of rubber and plastic hoses.

W. F. Schaphorst
Newark, N. J.

Heat's a killer

HEAT IS JUST AS HARD on machinery as it is on humans, but it is not always a simple job to protect motors and reducers from the effects of too much temperature.

A southern cement producer found that the best way to protect his electric motor and speed reducer from the effects of radiant heat from the kiln and the almost tropic heat was to build these little sheds. Even though the corrugated material was simply and easily put together, the net result is an effective protection for the machinery.

Strong but economical conveyor supports

JUDGING FROM THE VOLUME of mail, there is a lot of interest in the techniques of supporting conveyors above stockpiles. As a result, we have been keeping a sharp lookout for sound designs which have been developed to try to come up with a strong but economical support.

The internal forces in piles of sand, gravel or stone are remarkable for the damage they can do to concrete piers, A-frames or other supports which are imbedded in the material. These "hydraulic" forces can twist, bend or upset very substantial columns, often to the astonishment of the designer or operator who was not aware of them.

An eastern rock products producer came up with the columns shown here. Conveyor support columns were made from heavy tubes, each with a circular plate and reinforcing gussets near the middle of the column. Not only is the circular column the strongest for this application; it also presents a minimum surface for the pile pressure to bear upon.

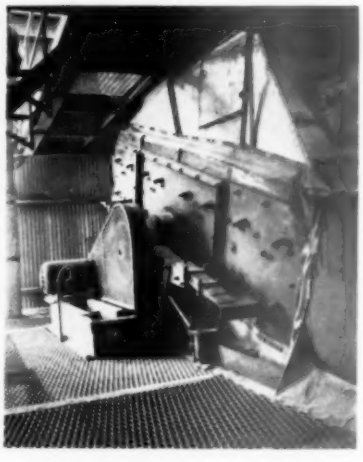
"And hearing aids, too"

ROAD BUILDERS and rock products producers the country over are constantly faced with the hazards of radio transmitters setting off electric blasting caps prematurely, often with catastrophic effects.

While most people are quite aware of the danger from transmitters, not everyone is alert to the possibility of car radios, dictating machines and even hearing aids emitting radio signals. There is no positive evidence that these weak signals can set off blasts, but in many parts of the country, they take no chances.

In the west there are many signs warning "Blasting area—turn off radios." When access roads are narrow and traffic heavy near blasting areas, operators are understandably shy about permitting radios to operate.

Screen closures



WHEN AN EASTERN rock plant operator installed dust collection equipment, he found that it was not possible to design hoods and chutes to fit close enough around vibrating screens. Air leaks at the screens greatly reduced the effectiveness of the system.

To overcome this problem, canvas strips were fitted around the narrow openings to close them off. At the same time, the cloth could be used to cover many openings which were too large or odd-shaped to use sheet metal seals efficiently. **END**

B.F.Goodrich

B.F.Goodrich Rock Service tires reduce delays, save contractor up to $600 per hour

WESTERN CONTRACTING CORP. operates 2,000 vehicles to build highways, dams and air bases all over the country. Here the job is earthmoving for a new runway at Wright-Patterson Air Force Base, Fairborn, Ohio. The scraper above carries loads as heavy as 50 tons, works 22 hours a day. The tires are new B.F.Goodrich Rock Service, chosen because they substantially increase hours of service and reduce delays due to tire failure. Avoiding these delays saves the company $300 to $600 per hour in downtime expense.

Look at the husky double chevron Rock Service tread. It bites in to give maximum traction and resist side-slippage in forward or reverse. The B.F.Goodrich FLEX-RITE NYLON cord body withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. This Rock Service body outwears even the extra-thick tread, can be retreaded over and over!

If you do earthmoving it will pay you to see the new Rock Service tire at your B.F.Goodrich Smileage Dealer's. He has a tire for every type of construction work. You'll find his address under Tires in the Yellow Pages of your phone book. *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Enter the B.F.Goodrich Truck Tire Mileage Contest. You can win a Thunderbird or Corvette or one of 310 other prizes. See your B.F.Goodrich dealer for entry blanks.

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B.F.Goodrich *off-the-road tires*

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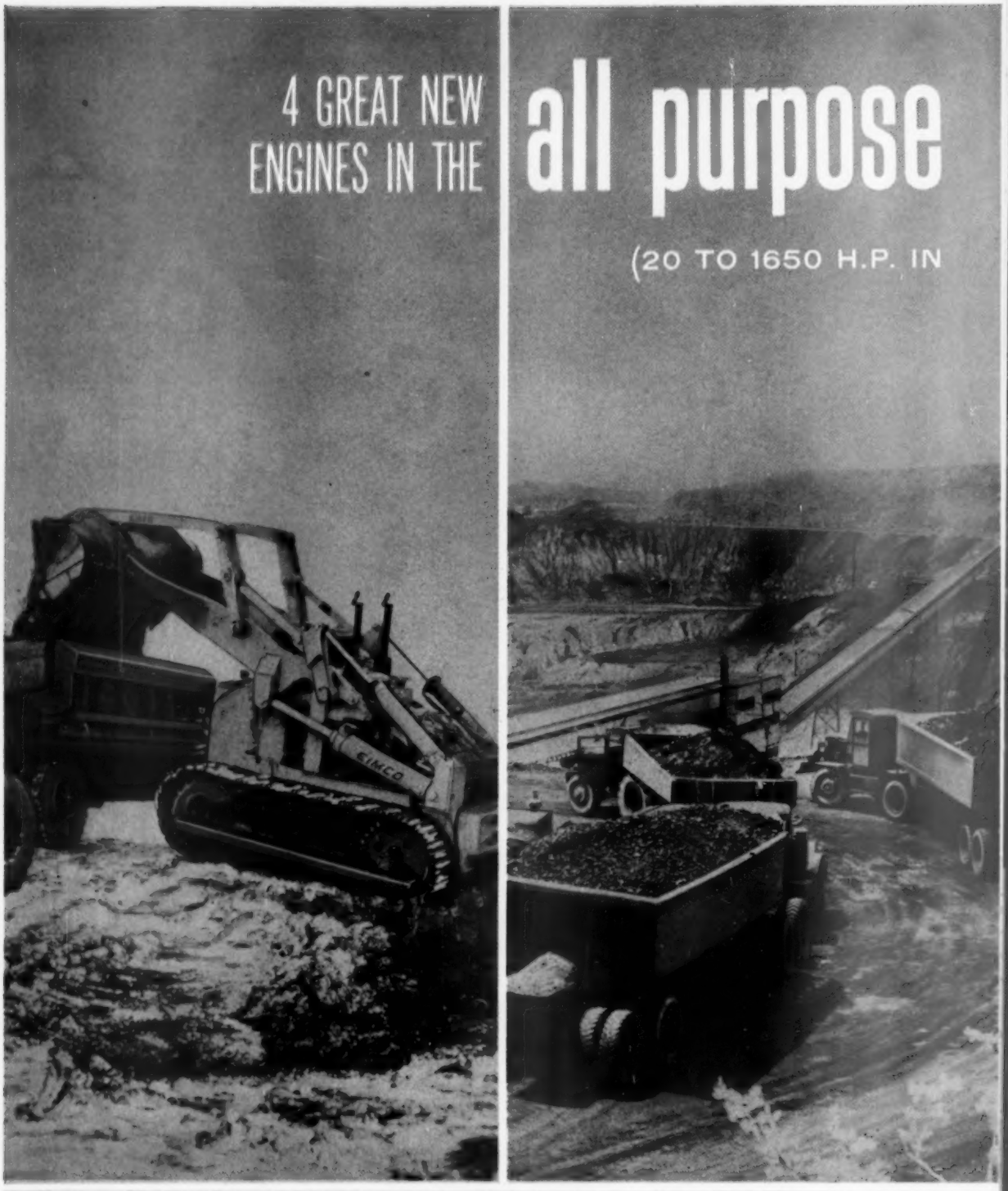
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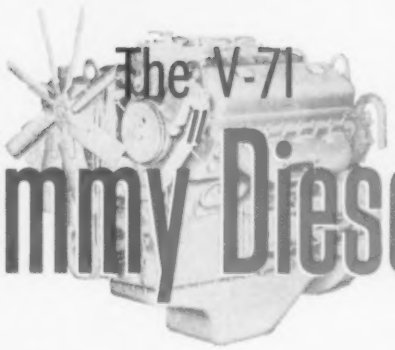

The V-71 "Jimmy" Diesels

NEW FOR THE MINING INDUSTRY

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The new V-71 "Jimmy" Diesels are a further illustration of GM Diesel's mighty new power concept —rounding out the All-Purpose Power Line—yet retaining the GM Diesel family relationship and parts interchangeability.

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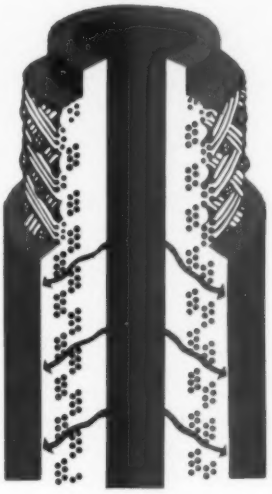
Homoflex Air Hose is also available for extra heavy duty and with yellow cover stripe for visibility; also in types for water, other fluids, and gases. Homoflex features result in lower costs for a wide range of job requirements. Let an R/M representative show you how you can get longer, trouble-free service—"More Use per Dollar"—with Homoflex Hose and other types of R/M hose.



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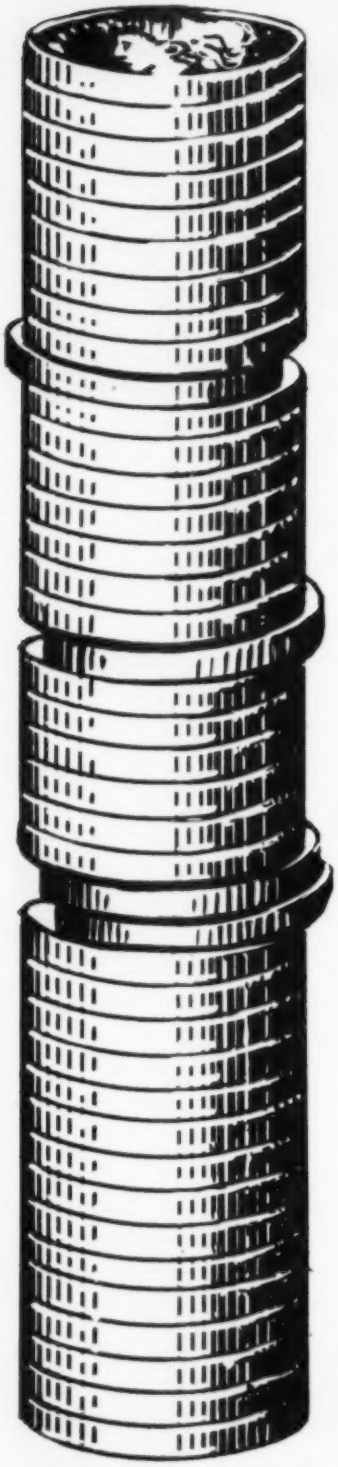
Fringe payments have skyrocketed

1957



$43. billion

Data estimated by U. S. Chamber of Commerce

Fringe benefits are going up

Rock products producers should take a long, hard look at the total picture of fringe benefits —then set a calculated course to keep them within the bounds of good sense and good business

1929

$1.5 billion

Rock Products
APRIL, 1959

by Fred D. Lindsey*

TOO MANY AMERICAN BUSINESSMEN have become so entangled in the individual trees in the forest of fringe benefits that they haven't recognized how thick the forest has become and how large it has grown. They should recognize it—and do something about it. If they don't, runaway fringe benefits are going to be running away with profits, too—where they haven't already.

How serious is the fringe benefit problem? Over the past decade, we at the U. S. Chamber of Commerce have made six detailed studies of fringe benefits. The most recent study includes 1,020 companies covering most major American industries. Extracting the rock products industries from this group, we find that they are paying 17.1 percent of their payroll for fringe benefits. Looking at it another way, 36 cents for each payroll hour or $765 per year for each full-time employe is paid by rock producers for fringe benefits.

This means that fringe benefits constitute one of your largest costs of doing business—and, of course, this is true in all other industries as well. Yet it's surprising how little most businessmen know about fringe benefits—what they are, how much they cost and what can be done about them.

What are fringe benefits? There are many answers to this question, depending, of course, on the point of view. For the purpose of our survey, we included as fringes: social insurance taxes to government, private insurance and pension payments, vacation and holiday pay, etc. We did not include holiday or overtime premium pay, or production bonuses.

Fringes vary widely among different industries. In our study, a hotel at one extreme was paying 6 percent of payroll for fringes, while a chemical company—at the other extreme—actually had fringe benefits of more than 60 percent of its payroll. Expressed as cents per payroll hour, the variation was even more extreme—ranging from 8 cents per payroll hour to more than 90 cents. On an annual basis, several companies paid less than $200 per employe, while a few paid more than $2,000. On the average, over a whole year, the weekly 40-hour wage of employes in the companies we surveyed included pay for about 7 hours during which they did no work.

In what ways, specifically, are employes paid for not working? Let's consider them under four headings: (1) Legally required payments, (2) Agreed-upon payments, (3) Payments for time not worked, (4) Miscellaneous fringes.

1. Legally required payments would include principally old-age and survivors' insurance, unemployment and workmen's compensation and such miscellaneous legal payments as sickness benefits insurance and similar items which will vary state-by-state. While OASI has a uniform tax schedule among contributing companies, unemployment and workmen's compensation may fluctuate considerably. Every state requires employers to cover part of the wage loss of workers who are injured on the job, to meet medical costs and to help dependents of workers who are fatally injured. The size of this contribution depends on the accident records of individual companies, thus providing the employer a considerable incentive to strive to reduce accidents on the job.

The size of unemployment compensation taxes depends on the number of company employes laid off during the previous year or two. Although these taxes average from $40 to $50 per year for each employe, they may be as low as $10 to $15 or as high as $100 per worker. Again, this method of taxing was designed in an effort to give the employer an extra incentive to provide steadier jobs.

2. Agreed-upon payments have shown the most phenomenal record of growth among all fringe benefits. Most of this increase has come through employers' contributions to pensions, life insurance and sickness and hospitalization insurance.

Among the companies participating in the Chamber of Commerce survey, 19 percent listed no private pension payments, while—at the other

*Economic Research Statistician, United States Chamber of Commerce, Washington 6, D.C.

Built-in cost increases on a fringe item which may be small today could break the rock products producer a decade from now

Fringe benefits *continued . . .*

extreme—about 7 percent paid amounts for pensions equalling 10 percent or more of their payroll. Pensions for all companies surveyed (including those with no program) averaged 4.1 percent of payroll.

The number and scope of other agreed-upon fringe benefits being written into labor contracts is broadening every day. They include such things as: contributions to privately financed unemployment benefit funds; termination pay allowances; discounts on goods or services purchased from the company by employes; free meals; payments to needy employes; stock purchase plans; school tuition for employes—and many, many others. The door has been opened so wide in this fringe area that almost any proposal has now become acceptable as a legitimate bargaining device.

3. Payments for time not worked have also been given a strong push in bargaining sessions in recent years. This category includes a large number of relatively minor labor costs which are likely to add up to a considerable sum when considered en masse. The major items in this category include; paid vacations and bonuses in lieu of vacation; holidays not worked; sick leave; National Guard or military reserve service; jury duty, and time lost due to family difficulties. Paid rest periods, lunch hours, coffee breaks, wash-up time, travel time, clothes-change time and similar activities could also be considered with this group.

4. Miscellaneous fringe benefits—which don't fall easily into any of the three above categories—would include such items as profit-sharing payments, Christmas or other special bonuses, service awards, safety prizes and suggestion awards. You could undoubtedly add to this list from your own experience.

It all adds up to a very handsome package and one that is growing with almost breathtaking speed. For example, in 1929 fringe benefits cost employers $1.5 billion or about one cent per hour per employe. By 1957, fringe benefits had risen to $43 billion—or about 35 cents per hour per employe. Estimates based on careful statistical analysis show the cost of fringes is likely to reach $120 billion or about $1 per hour per employe by 1975.

The unions, of course, are whooping it up for fringe benefits and doing everything they can to make the package more attractive. In taking this stand, they have also registered strong objections to the concept of fringe benefits outlined in the points above. In order for the businessman to present his point of view on fringes effectively, he should familiarize himself with the union arguments. They were rather well summed up in an article in the AFL-CIO publication "Economic Trends," which had this to say about the union position on fringe benefits:

"The Chamber of Commerce study is deliberately misleading in that it assumes that these fringes represent payments to workers over and above their regular wages. Actually this is nonsense, because many of these fringes—such as vacations, rest periods, etc., are included in the regular hourly wage payment and do not constitute any additional payment to the worker.

"Nor does the study take any account, in referring to 'costs' of fringe benefits, of the various offsetting savings to the employer in the form of higher productivity, greater morale or lower personnel costs that result from these fringes.

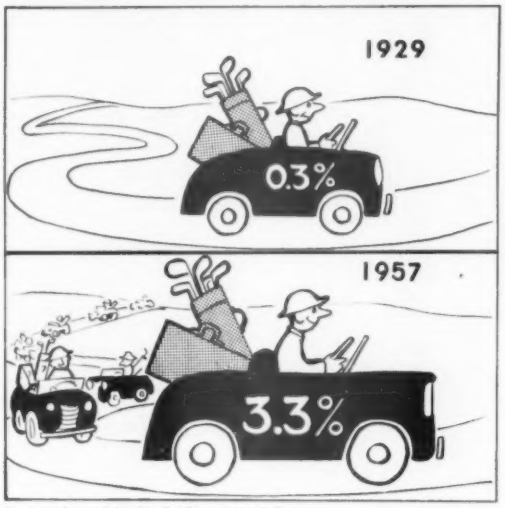
"Naturally, the amount of money represented by these fringe benefits is bound to increase. Yet the American economy remains basically sound, and the American worker (and the American businessman) today enjoys the highest standard of living in the world.

"Organized labor is proud that among its achievements can be counted the spread of various types of fringes to many groups of workers. Unions will be doing their best to continue this development into the future."

Obviously, in this climate of thinking, there is going to be no let-up in the pressure for more and more fringe benefits. Therefore, the businessman must go into labor negotiations armed as fully as possible to neutralize these pressures. The first weapon in his arsenal must, of course, be an awareness of the seriousness and scope of the problem. This we have tried to point out in the preceding paragraphs. But awareness of the problem isn't enough. What else can be done to check this precipitate increase of fringes? Here are a few suggestions you might want to consider:

1. Let your employes know about the extent of the fringes they are already being paid. Chances are, they don't recognize them. Communication isn't a one-way street. You should certainly be able

Paid vacations have jumped since 1929



Data estimated by U. S. Chamber of Commerce

to communicate with your employes as effectively as the union does.

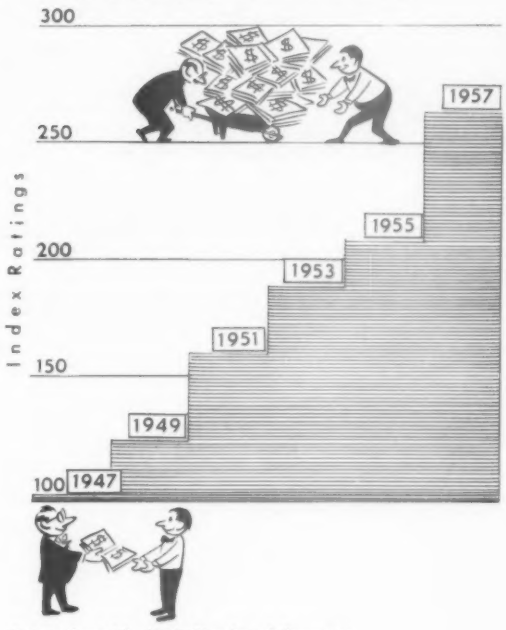
2. Be alert to the new demands in fringe benefits and be ready to answer them. The most immediate new objectives in this area will probably be: (a) broadened health insurance coverage to include doctor's care at home and office, dental care and drugs, in addition to present hospitalization benefits; (b) vested rights in a pension plan, permitting an employe to retain equity if he leaves the company before retirement; (c) more leisure time, including longer vacations, more holidays, shorter work week.

3. Don't trade off what seem innocuous fringe benefits today for hourly-rate concessions by the union without a thorough investigation of what the fringe will cost you in a few years. Built-in cost increases on a fringe item which may be small today could break you a decade from now.

One plan for coping with this situation that shows particular promise is that of an Ohio manufacturing concern which sets aside 15 percent of its profit before taxes from which to pay all fringe benefits, including death, disability, health and retirement benefits. What's left goes into a profit-sharing trust fund which is allocated to the individual employes on the basis of length of service and annual pay. The employe can borrow from this fund, and if he leaves the company before retirement, he is entitled to 10 percent of the value of his profit-sharing account for each year he has been under the plan. Thus, in ten years he is entitled to the full amount. This program has certainly provided a greater mutuality of interest between employer and employe—and this is a necessary step in the control of fringes which may

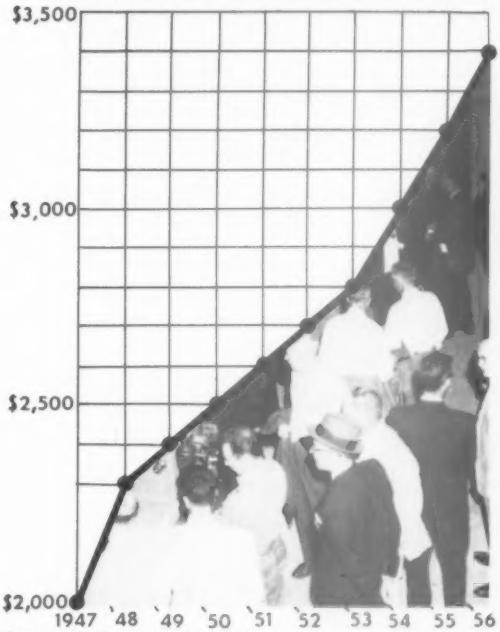
Please turn to page 145

Fringe pay per payroll hour is rising



Data estimated by U. S. Chamber of Commerce

Group life insurance: climbing steadily (average amount per employe covered)



Source: Life Insurance Fact Book

Giant ore carrier services Kaiser Gypsum plants

by Walter B. Lenhart

WHAT IS BELIEVED TO BE one of the largest bulk-ore carriers ever built for North American West Coast ports plies continuously between Kaiser Gypsum Co., Inc., calcining and wallboard plants at Long Beach, Calif., Antioch, Calif., and Seattle, Washington.

Christened SS Harry Lundeberg in June, 1957, the 525-ft.-long, self-unloading vessel has a capacity of 16,000 deadweight tons. It picks up its cargo of high-grade gypsum ore at San Marcos Island, an isolated spot in the Gulf of Lower California, Mexico, loading in less than 24 hours and proceeding to each of the three plants about once a month. The company's marine operations are handled by Gypsum Carrier, Inc., a Kaiser Gypsum subsidiary.

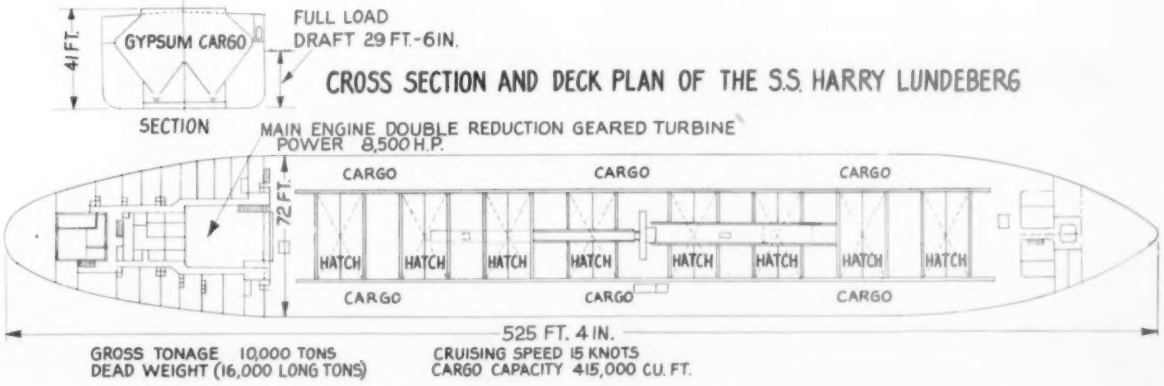
The SS Harry Lundeberg ore-handling system, designed by Kaiser Engineers, has two parallel, 36-in.-wide belt conveyors that run under a total of 80 unloading gates, 40 to a side. The minus 4-in. rock gypsum, pure white in color and of a remarkably uniform gypsum content—96 percent plus—is fed to the belts through as many gates as are desired. The two belts, running about 25 ft. apart, deliver to a permanently mounted, 48-in. inclined belt, which, in turn, delivers to a 48-in. belt on a swinging boom that can deliver to shore. This boom conveyor is lashed to the deck when the ship is on the high seas.

Because of the careful design of the holds and fuel-oil and water-storage compartments, the boat is never top-heavy. The holds are self-cleaning, and the ship can unload from either side. Near the lower belt assemblies is a series of colored lights that indicate the list of the boat, so that the operators can keep the boat at even keel at all times during unloading. A list of one degree will cause a red light to flash.

The 80 unloading gates have large, horizontal-type throat openings. The gates are opened and closed by a power-driven lug wrench. This power wrench is mounted on rails from the ceiling so that it can be moved from gate to gate. The boat unloads at a nominal rate of 1,200 tph., and the unloading process is clean and dustless.

SS Harry Lundeberg was designed by George C. Sharp Co., marine architects. Kaiser Engineers, Inc., Division of Henry J. Kaiser Co., was the contractor in its construction. END

Kaiser Gypsum Co.'s gypsum ore carrier SS Harry Lundeberg is shown here unloading at the company's Antioch, Calif., plant. The 16-sided raw gypsum storage dome (foreground) holds up to 35,000 tons of raw material



Coral rock serves as base and basis for new cement plant

Lehigh Portland Cement builds 2-kiln wet-process plant in the Everglades

ATTRACTED TO ONE OF THE BIGGEST, boomingest markets for cement in the country, Lehigh Portland Cement Co. put its newest plant in the Florida Everglades near Miami. This $25-million, 2-kiln wet-process installation was built right on top of a massive formation of coral rock, a limestone deposit underlying the seemingly limitless swamps.

While the rock formation was an excellent base for the buildings and heavy machinery, the ever-present water posed difficult problems for Lehigh both in construction and for plant operation. Top of the limestone is but 2 ft. below the water level in the ground. Any excavation in the porous rock quickly fills to the brim with water, while tropical torrents of rain can raise the water table within a few hours in the poorly drained marshland.

One solution was to raise the grade of the entire plant area about 3 ft. Now, practically every part of the plant, including haulage and access roads, is above the highest waterline. All piping and electrical conduit between buildings have been placed underground and encased in concrete. To avoid a deep pit and heavy, watertight foundation, the primary crusher was set above grade. To reach the top of the crusher, it was essential to build a long ramp for the truck haulage road.

The water problem also complicates quarry operations. A 7½-in. rotary drill with a tubular stem easily puts down a 50-ft. hole in a single pass into the relatively soft granular rock. But before the stem is pulled, the kelley bar is removed and the corebreaker withdrawn through the stem.

Then 4½-in.-diam. fused cartridges of ammonium nitrate or dynamite are dropped down the tube into place in the hole. As the drill stem is carefully lifted out of the hole the charge remains in place. Without this simple procedure, it might be difficult to slip the charges into a hole filled to the top with water and partially choked with loose rock and muck. The 10 or 12 charged and fused holes are set off at the end of each shift to throw rock far out into the water-filled quarry.

The 200-ft. boom of an electrically operated walking dragline casts a 8-cu. yd. bucket far out into the lagoon to reach the loose coral rock. The dredge material is piled in 100-ft.-high windrows to drain and dry as much as possible in the hot tropical sun.

A 3-cu. yd. electrically operated shovel reclaims from storage piles into a fleet of five 15-cu. yd. end-dump trucks for the half-mile trip to the top of the primary jaw crusher. Normally, only four trucks are in use; the fifth unit is serviced or held as a standby.

The 48 x 60-in. jaw crusher is fed by a 5 x 15-ft. wobbler feeder. This unit has proven itself invaluable in handling the wet, sticky rock. It greatly reduces the load on the crusher by removing a substantial amount of minus 3-in. fines. This small material drops through the slowly rotating elliptical bars of the feeder to a 5 x 14-ft. double-deck vibrating screen just below.

Normal operation of the screen permits the minus ¾-in. coral rock to go directly to the storage belt conveyor system. Oversize drops to a belt

by Elwood Meschter

Walking dragline casts 7-cu. yd. bucket far out into water-filled quarry

Below: Crushed coral rock on way from jaw crusher to impactor

conveyor taking the material from the primary crusher to a secondary crusher.

But when masonry rock is needed, material from the two decks of the screen is taken to a masonry rock storage area on an independent belt conveyor system. The two decks of the screen allow a wide range of masonry rock to be made.

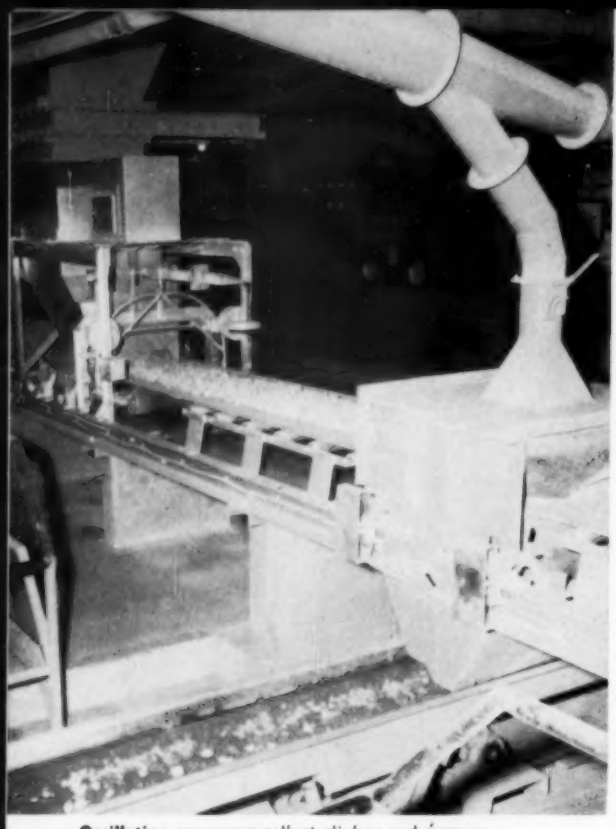
Limestone from any part of the quarry can be used. The formation has slightly more silica in the lower levels; however, there is still so little of this ingredient that additional sand must be added later in the process.

The jaw crusher produces minus 8-in. material, which is dropped down to an inclined belt conveyor that takes it to the secondary crusher. This unit is an impact breaker having a throat opening of 19 x 76 in. and was chosen for its ability to make a maximum of minus ¾-in. fines from this raw material.

Above the secondary crusher is a small vibrating feeder. This feeder protects the impactor from surges of material on the belt conveyor. At the same time, it increases the efficiency of the crusher by spreading the flow of rock across the full width of the long narrow opening in the crusher top.

Crushed rock is sent to a pair of 5 x 14-ft. double-deck vibrating screens which split the flow between them. Oversize is returned to the crushing system and the accepted material is sent on its way to storage. Design capacity of the rock crushing and screening system is about 550 tph.

All raw materials are kept in a 94 x 864-ft. covered storage building. Coral rock is distributed to storage by a belt tripper traveling along the edge of the retaining wall high above the floor of the storage area. It can distribute coral rock uniform-



Oscillating conveyors collect clinker and gypsum for the finish mills

Coral rock *continued . . .*

ly along the wall, or it can discharge into a single pile to be reclaimed and redistributed by one of the two 6-cu. yd. overhead cranes. Masonry rock is simply discharged off the end of the last belt in its own conveyor system.

Other raw materials are brought into the plant by rail and are taken to storage by an inclined belt conveyor system leading from the rail hopper to the edge of the storage building. Final conveyor in the system is a shuttle belt that puts each material in a specific location in the storage area. Crude gypsum, sand for added silica, slag—a copper furnace residue—to supply iron, and "staurolite," an alumina-bearing by-product of Florida's titanium industry, are all stored, ready for use in the cement making process.

The raw milling department has two sections. In the first, the hard, highly abrasive sand-slag-staurolite components are ground together to make a slurry. Two 8 x 43-ft. two-compartment mills operate in series, reduce these elements and send this sand slurry to storage in one of two storage tanks.

In the second operation, the sand slurry is metered out of storage to join coral rock in each of three 8½ x 43-ft. three-compartment mills. Finished slurry is pumped to one of six concrete storage tanks.

Feeding devices for raw materials in the milling department consist of rotary table feeders discharging to weighing belt feeders for each of the three minor components. An oscillating conveyor collects these materials and takes them to the boot of a concrete-cased bucket elevator to be lifted above the inlet to the mill.

Other rotary table feeders ahead of each raw mill meter out limestone to an oscillating conveyor that takes the rock to an elevator serving each mill. Each limestone table feeder is interlocked electrically with the ferris wheel feeder supplying pre-ground slurry. Thus, the exact ratio of minor elements to coral rock determined by the plant chemist is maintained in spite of varying conditions in volume of material fed to the mills.

The finished product from the raw mill is sampled and analyzed at frequent, regular intervals. In this way, the slurry going to storage is close to kiln feed composition. Any variation in analysis is detected quickly, and the necessary changes in raw material feed are made promptly.

A battery of six slurry-mixing tanks holds a total of about 9,600 bbl. of the slurry produced by the raw grinding mills. After analysis, slurry from one or more tanks is pumped to a blending tank. Then the completely agitated and blended mixture is pumped to one of the two 6,200-bbl.-capacity kiln-feed tanks.

Both kilns were mounted on high concrete piers so that coolers and clinker handling equipment could be placed above ground. Each oil-fired kiln is 12 x 11 x 12 ft. diam. by 475 ft. long. A three-stage heat recovery system in each kiln reduces the exhaust gases to about 320 deg. F. Starting with the feed end of the kiln, first comes heat exchanger consisting of grates and baffles. Second stage is a conventional chain system, and this is followed by a stainless steel "cross." These sections assist the transfer of heat from the hot gases to the incoming slurry. Normal operating speed of each kiln is about 60 rph., but speed is variable from 30 to 80 rph.

Fuel for the kilns is brought into the plant by rail, and the Bunker C oil is stored in two 600,000-gal. tanks. The heavy oil is heated to about 240 deg. F. in steam coils to be pumped to the kilns. Here, atomizing burners inject fuel to the kilns at 1,000 psi. and at the rate of about 1,150 gal. an hour for each kiln.

Complete instrumentation provides a permanent record of each phase of clinker making as well as close control of the process. Thermocouples in the

back end housing, at the cross section and at the chain section record temperatures at these points and tell the burner about conditions at these critical locations in the kiln. A recording instrument shows oxygen content of exhaust gases. This instrumentation, together with visual observation at the clinker discharge end, enables the burner to adjust fuel consumption.

Exhaust gases from each kiln are introduced directly into two electrostatic dust collectors. These strip virtually 100 percent of the suspended solids from the stream of exhaust gases, and their efficiency is aided by high vapor content. Dust is dropped directly from the electrodes into hoppers which are emptied automatically at regular, frequent intervals.

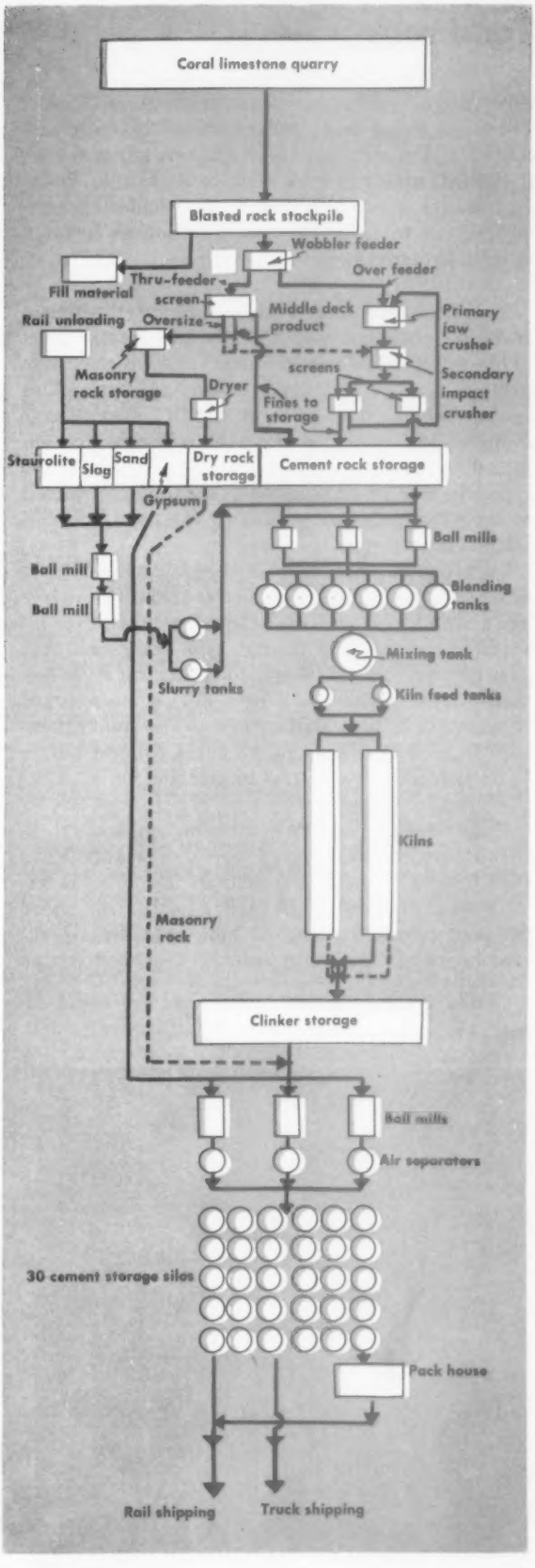
Dust from each kiln is elevated to an overflow-type bin which returns dust to the kilns that made it. This returned dust is mixed with the stream of slurry delivered by a ferris wheel feeder which is synchronized with the kiln speed. Dust in the body of the storage bin may be trucked to a waste disposal area.

Hot clinker from each kiln drops to a 7 x 50-ft. horizontal grate cooler where it is reduced from 2,500 deg. F. to about 150 deg. F. at a capacity of about 4,000 bbl. a day. This efficient cooling is achieved with a three-component automatic control system. The speed of the grate is controlled by the undergrate pressure actuating the variable speed drive on the grate. An increase in pressure indicates an increasing depth of material. The control increases the speed of the grate, which tends to reduce the depth of material until an equilibrium is reached.

The first compartment cooler fan damper is controlled by the temperature in the throat leading from the cooler to the kiln. A thermocouple acts to increase the volume of air delivered by the first compartment fan as the temperature increases and to reduce it as the temperature decreases. This fan, together with the main cooler fan, furnishes the portion of air which is used as secondary air in the kiln. The remainder of the air through the cooler is drawn off through a dust collector, and this volume is controlled automatically to maintain a constant hood draft.

Oscillating conveyors are extensively used in Lehigh's new plant. Two parallel systems of these conveyors take clinker from the coolers to the boot of each of the two bucket elevators heading from ground level to the storage area. Only one conveyor system is in use; the other system is a standby. The bucket elevators discharge over the wall of the storage area or to a drag-chain conveyor system which distributes clinker to other parts of the storage area.

The finish milling department is equipped with



Coral rock *continued . . .*

three 8½ x 39-ft. three-compartment ball mills. Three weighing belt feeders ahead of each mill control the exact amounts of clinker, gypsum and, if needed, masonry rock sent to each mill. These ingredients are dropped into an oscillating conveyor to be taken to the boot of a bucket elevator to be lifted into the mill.

The discharge from each mill is put through a 16-ft. air classifier which sends all oversize back to the mill feed to be reground. Finished cement is pumped to one of 30 concrete storage silos. Here again, the product of each mill is regularly sampled and analyzed. Cement samples are obtained by using a continuously operating screw-type sampler in mixing screw section just ahead of the pneumatic pump pushing the newly ground cement to storage.

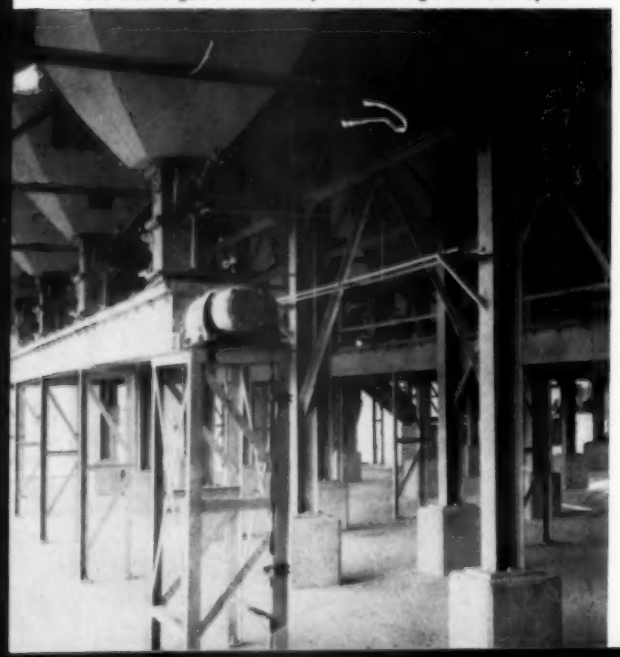
Coral rock for masonry cement is processed in a separate system. Masonry rock is taken from storage and fed to a 7 x 80-ft. oil-fired rotary dryer by a reciprocating plate feeder. The dryer can produce between 18 and 25 tph. of coral rock with less than 3 percent final moisture. This small amount of moisture is no disadvantage to the final grinding. A small crusher reduces dried rock to minus ¾-in. before it is returned to storage.

Huge storage capacity for finished cement is an outstanding feature of the new plant. More than 480,000 bbl. can be held in the 30 silos arranged in two banks of 15 each. Five tunnels under the silos permit loading of tank trucks and covered hopper cars simultaneously, and each car or truck can be spotted under a loading spout, filled, weighed and on its way in a matter of minutes.

The electrical system in the new plant was as carefully engineered as the process equipment. The local utility supplies 69,000 v. to a substation which reduces it to 4,160 v. for distribution to production departments. Recording watt meters in a central control station register power input to each department. It is essential to closely schedule the operation of heavy equipment to avoid penalty for excess demand. The raw mill department normally operates during the night shift to balance the power demand of the quarry and pack house operation during the day.

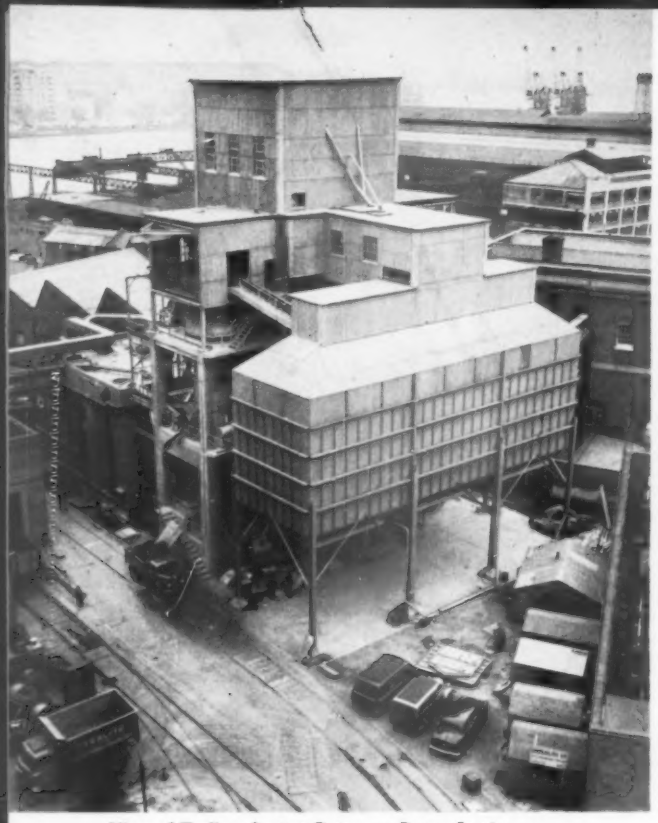
Emergency power is provided by a standby diesel generator. This is not idle equipment. Some "sportsmen" in the Miami area sharpen their marksmanship by shooting at the ceramic insulators on the utility's distribution lines. When they succeed, they occasionally bring down the entire power line into isolated parts of the Everglades wilderness. **END**

Hoppers under the electrostatic dust collectors are discharged continuously to collecting screw conveyors



MAJOR EQUIPMENT IN THE MIAMI PLANT OF LEHIGH PORTLAND CEMENT COMPANY

In quarry:	
Dragline, 8 cu. yd. electric	Bucyrus-Erie Co.
Shovel, 3 cu. yd. electric	Marion Power Shovel Co.
Trucks, 15 cu. yd. end-dump (5)	Euclid Div. GMC
Drill, 7½-in. rotary	Mayhew Supply Co., Inc.
In raw materials processing:	
Crusher, 48 x 60-in. jaw	Traylor Engineering & Mfg. Co.
Wobbler feeder, 5 x 15-ft.	Universal Engineering Co.
Impactor, Type CB 17 x 50 in.	Pennsylvania Crusher Div.
Vibrating feeder	Syntron Co.
Vibrating screens 5 x 14-ft. (3)	W. S. Tyler Co.
Overhead cranes 6 cu. yd. (2)	Harnischfeger Corp.
Car shaker	Hewitt-Robins
Vibrating feeder	Jeffrey Mfg. Co.
Raw milling department:	
Sand slurry mills 8 x 43 ft. (2)	F. L. Smidth & Co.
Cement rock mills 8½ x 43 ft. (3)	F. L. Smidth & Co.
Rotary table feeders 5 ft. (5)	F. L. Smidth & Co.
Weighing belt feeders (3)	MacDowell Co., Inc.
Storage tank machinery	Dorr-Oliver, Inc.
Kiln department:	
Kilns 12 x 475 ft. (2)	F. L. Smidth & Co.
Cooler, 7 x 50 ft. horiz. grate (2)	Fuller Co.
Drag chain conveyors (2)	Kensington Steel Co.
Electrostatic dust collectors (4)	Buell Engineering Co.
Bucket elevators (2)	Chain Belt Co.
Cement processing:	
Finish grinding mills 8½ x 39 ft. (3)	F. L. Smidth & Co.
Masonry rock dryer 7 x 80 ft.	F. L. Smidth & Co.
Separators 16 ft. (3)	Sturtevant Mill Co.
Weighing belt feeders (9)	Shaffer Poidometer Co.
Bucket elevators (3)	Chain Belt Co.
Pneumatic conveyor system	Fuller Co.
Dust collectors (3)	Northern Blower Co.
Track scale	Fairbanks-Morse Co.
Truck scales (2)	Fairbanks-Morse Co.
Entire plant:	
Conveyor idlers	Chain Belt Co.
Oscillating conveyors	Carrier Conveyor Co.
Motors, reducers, electrical equipment	Westinghouse Electric Corp.
Construction	Walsh Construction Co. Perini Corporation Frank J. Rooney, Inc.
Design engineers	F. L. Smidth & Co.



View of Terlite plant at Battersea Power Station

Cementation Co., Ltd.'s installation burns fly ash with as low as 3 percent carbon content

Make lightweight aggregate from fly ash

THE USE OF FLY ASH AS A RAW MATERIAL in the manufacture of lightweight aggregate promises to eliminate an expensive disposal problem in power plants.

The Cementation Co., Ltd., London, is converting fly ash into aggregate at the Battersea Power Station.

Disposal of fly ash—furnace residue—has been and is a continual headache for power plants. In many areas, its disposal involves cost of removal and finding fill areas or special ships or barges for dumping at sea. Methods have been developed in the past for the use of this material in the manufacture of lightweight building block and as a substitute—up to 20 percent—for portland cement, but the amount of fly ash used in these ways is only a fraction of the total amount produced in any one year.

The use of fly ash in the process used by the Cementation Co. eliminates disposal costs and yields a valuable building material. Because of its low density, the light, strong concrete made with Terlite (as the material is called) has a heat conductivity one-fourth that of traditional concrete. It is a good insulator and is highly fire-resistant. Terlite has excellent soundproofing characteristics, also.

The Battersea plant is the first one of its kind. Until now, no plant has been available to burn material with a carbon content as low as that of fly ash. The Battersea installation is capable of burning ash with as low as 3 percent carbon content, without added fuel, at a maintained temperature of up to 2,000 deg. F., converting it into lightweight aggregate.

The sintering plant itself is of simple design. At its heart are two kilns, one to each of the dual units. These kilns are 40 ft. high, 10 ft. diam., and are of welded steel plate lined with refractory brick. Each kiln has an annual capacity of 40,000 tons of Terlite.

The ash from the power station's electrostatic precipitators is first delivered into bunkers. From these it is fed into a shallow circular pelletizer, revolving at an angle, where it its sprayed with water. In the revolving pelletizer, gravity and centrifugal force cause the damp ash to form into small balls. Size of these balls is determined by the speed of revolution and the tilt of the pelletizer. The pellets spill over the rim of the pelletizer tray into a conveyor and are carried to the kiln.

Since there is enough carbon in the pelletized fly ash to support combustion, the only fuel needed is that required to kindle the fire at the start. In the process, sulphur and other volatile compounds are driven off, as well as all carbon, so that the final product is completely inert.

Please turn to page 149

Tractor takes material from stockpile at top of hillside and 'dozes it into hopper where high-pressure water turns it into a mud solution

Overburden is 'dozed off to make

Dragline and bulldozer used to

M. C. West's continuous operation

A TENNESSEE MINE-OWNER digs out 1,500 tons of pay material per day from hillside phosphate deposits in an operation that is a continuous process—as material is removed from one pit, a new one is started up the hill.

M. C. West's operation is one of many independent mines around Columbia, Tenn. Bettered only by Florida's fields, Tennessee is the second largest producer of phosphate in the nation, and the Columbia area is a major factor in that production. Mr. West's pit mines, in both surrounding Maury County and nearby Hickman County, supply phosphate for industrial and agricultural use.

The Maury County mine consists of two deposits 500 yd. apart, located about three miles northeast of Columbia. The original pit, opened in September, 1956, is a residual deposit formed by leaching of limestone by phosphoric acid. Faulting results in a rolling deposit with large "puddles" of phosphate 2-15 ft. thick and 200 ft. wide. Lying 60 ft. below the surface, the ore body runs about a mile around the hillside. The phosphate occurs mixed with clay in loose beds that require no blasting or drilling. Mineral concentrations in the bed run from 28 to 32 percent P_2O_5.

Due to the crescent shape of the deposit and the slope of the hill, Mr. West has found that bulldozing the overburden down the hillside until a flat working-area is reached is the most productive way to get at the phosphate. A team of two large tractor-dozer units pushes the clay and broken flint down the hill, cutting the area back about 150 ft. to a depth of 40 to 50 ft. With both blades operating at the same time, large loads of overburden can be moved in a short period.

When the tractors have finished, the resulting bench provides a broad footing for a 3-cu. yd. dragline that strips the remaining 20 ft. of overburden, making a pit 80 to 100 ft. wide around the hill. Then the tractors move back in to pioneer and build haul ramps into the pit, giving the dragline and the 20-ton dump trucks access to the pit. As the material is removed from the lower pit, the bulldozers start a new pit uphill.

The black, clay-like material is usually loaded into the trucks by a 1½-cu. yd. dragline. The trucks haul the phosphate eight miles to one of the chemical plants in Columbia where elemental phosphorus to be used in laundry detergents is reduced from the ore.

Since the plant requires a 25 percent grade of phosphate, an important part of the West operation is the second deposit at the mine site. Opened in March, 1957, the pit is similar to the first one, but smaller. Producing a 23 percent grade, this deposit outcrops 150 ft. from the summit of the hill and runs at the same level to the opposite side. At this deposit, a 1½-cu. yd. dragline loads the ore into trucks which are sent to the processing

footing for dragline operations

At second Maury County mine, a 1½-cu. yd. dragline is used to load trucks with lower-grade ore to maintain a 25 percent concentrate

mine hillside phosphate deposits

yields 1,500 tons of pay dirt per day

plant at regular intervals to balance the higher-grade ore from the other pit. When production of the two pits is averaged during weighing and mineral-analysis checks at the plant, the required 25 percent concentration results.

With an 8-man crew working a 10-hr. shift, the mine is currently producing 1,500 tpd. Mr. West figures that at this rate the mine will be worked out in 1½ more years. But he keeps an exploration crew with a 6-in. auger in the field, searching for new deposits.

Mr. West also works brown phosphate rock pits at Bratton and Swan Creek in Hickman County. The matrix here is weak in nature and is broken loose by dragline and loaded into 20-ton trucks which haul it to West's washing plant on the bank of the Duck River about seven miles away.

Trucks dump into a stockpile at the top of a hill above the plant. A tractor bulldozes the material over a concrete abutment, and high-pressure water from the river is played on the material turning it into a mud solution. Larger pieces are broken in a jaw crusher, and the solution is washed in a baffled agitator and allowed to settle. Heavier material is picked up by a drag belt and sent on to second and third washings.

After the third washing, the matrix is dumped on a pile by a conveyor where a ¾-cu. yd. clamshell stockpiles it and loads trucks for shipment to nearby processing plants for manufacture into fertilizers.

After each washing operation, fine-grained, high-concentrate sand is pumped from the washing tank into a settling tank and there separated by centrifugal sand separators. The sand contains about 32 percent phosphate, compared with about 20 percent in the larger lumps. Production by the eight-man crew is about 300 tons of phosphate rock in an eight-hour shift.

Because of the higher iron content (five percent) of the Hickman County phosphate matrix, it is not well suited to production of elemental phosphorus and is used almost exclusively for agricultural fertilizer.

Although the chemical companies with plants in the Columbia area maintain reserve deposits of phosphate-bearing ore in the area, many independent mine operators like M. C. West continue to supply the majority of the raw material used by the plants.

END

MAJOR EQUIPMENT USED BY M. C. WEST

In mines:	
Tractors, D9 (2)	Caterpillar Tractor Co.
Dragline, 1201, 3-cu. yd.	Baldwin-Lima-Hamilton Corp.
Draglines, 605, 1½-cu. yd. (2)	Koehring Co.
Trucks, 20-ton	General Motors Corp. Ford Motor Co.
In washing plant:	
Tractor, D7	Caterpillar Tractor Co.
Jaw crusher	Bonded Scale and Machine Co.
Centrifugal sand separator	Dorr-Oliver, Inc.

Warrenville plant of Elmhurst-Chicago Stone Co. was a prime source of aggregates

Radial stacker: key to two-in-one

YOU CAN'T BEAT GOOD TIMING and strategic location in building an aggregates plant. Elmhurst-Chicago Stone Co. proved this with its new 350-tph. sand and gravel plant at Warrenville, Ill. These natural advantages are backed up by several outstanding design features, including a central radial stacker that enables the two-in-one plant to produce either washed concrete aggregates or unwashed road-base material.

Located about 25 miles west of Chicago, the plant is spotted in the path of the city's rapid westward expansion. The 300-acre plant property contains a 35-ft. deposit, enough for 35 years' operation, under only 4 ft. of overburden. Gradation of sand and gravel in the deposits is ideal for highway aggregates, for no blending from other deposits is necessary. The Warrenville operation will eventually replace Elmhurst-Chicago's nearby Winfield plant as the company's deposit there becomes exhausted.

Timing couldn't have been better. The plant was built just when the $450-million Illinois toll highway program was getting underway, and opened in time to produce 500,000 tons of aggregates for nearby toll-road projects. The plant produced a total of more than 800,000 tons during 1958, its first year of operation, by working 20 hr. a day for much of the year. Normal yearly production is expected to be about 500,000 tons.

Several outstanding features are included in the plant design. Most spectacular is the novel radial stacker. An effective water reclaim arrangement is a second important feature. Finally, Elmhurst-Chicago has provided centralized push-button control over the entire plant from four stations, plus a reclaim tunnel for quick, low-cost rehandling.

At first glance the sprawling Warrenville operation appears to be two plants, not one. At the left of the roadway at its center stand three towers for crushing and screening, and at the right appears to be another plant with washing and screening equipment. Stockpiles of finished aggregate are in place beside each "plant," and there seems to be no connection between the two.

The key to this puzzle is the central radial stacker leading from the dry-process part of the plant. This stacker stockpiles unwashed road-base gravel, but with the flick of a switch it can be swung into line with the washing plant. Clean concrete aggregates are now produced. Warrenville's superintendent, John T. Gray, says that Elmhurst-Chicago's nearby Barbers Corners plant, similar in design to his plant, is the first he knows of to use the idea.

for Illinois' toll road program

A central radial stacker enables Elmhurst-Chicago Stone to produce either washed concrete aggregates or unwashed road-base materials

by Kneeland A. Godfrey, Jr.

aggregates plant

Here's how the process flow is set up. Because the haul from pit to plant is short, only two excavators and two trucks, all of modest capacity, are required for raw materials handling. The 35-ft. face, partly below water, is worked by both a 1½-cu. yd. shovel and a 1½-cu. yd. crawler-mounted dragline. The shovel works the dry material, and the dragline follows stockpiling the portion from below water so it can drain for three days. Two 15-ton rear-dump trucks haul pit-run to a grizzly in the first tower about 1,000 ft. away.

Aggregate first meets processing plant at the grizzly which is made of rails spaced at 16-in. centers. Undersize drops to a 3 x 6-ft. reciprocating plate feeder which has a variable-speed drive permitting quick changes in rate of material flow through the plant. A big, 36-in.-wide belt then takes the through material to the top of the No. 2 tower where the primary 6 x 16-ft. triple-deck screen makes the first separations.

The 16 x 3-in. oversize from this screen is scalped off to a large gyratory crusher at the foot of this tower. Minus 1-in. material drops directly to the big radial stacker belt and is sent either off to one side as road base or directly to the washing plant. About 60 percent of Warrenville's 350-tph. pit run is in this minus 1-in. size class.

Two smaller cone crushers placed beside the primary crusher handle 3 x 1½-in. and 1½ x 1-in. fractions. Product from all three crushers is sent by a single belt back to a second screen set in the No. 1 tower above the grizzly.

At this second screen a separation is made which sends part of the flow to a small crushed stone plant off to one side and part back to the primary screen for eventual recrushing. Oversize from screen No. 2, a 3 x 1-in. material, is recycled to the gyratories. The minus ⅜-in. sizes go to the stone plant. But the middle fractions, 1 x ¾ and ¾ x ⅜ in., can be sent back to the primary screen to be mixed with the pit run. Atlernately the two fractions are chuted to a 42 x 24-in. twin roll crusher and then recycled back to screen No. 2 above it.

The stone plant consists of a washing screen, a truck load-out hopper beneath and another radial stacker system for stockpiling finished material on the ground. Though it has only one belt, the stone plant can stock out two sizes. The two-compartment hopper makes this possible. One size is stockpiled while the other is stored temporarily in the hopper's second compartment; then the process is reversed.

The washing plant at Warrenville is a maze of washing screens, log washers, screw washers and

Radial stacker *continued . . .*

a scalping tank. There is little likelihood here of minus 200-mesh clay getting through with the processed aggregates!

Atop the washing tower is a 6 x 16-ft. triple-deck vibrating screen with water sprays on each deck. Minus 4-mesh sand from the big unit drops to the scalping tank. After the unwanted clay and other fines are floated away, a chute carries the cleaned sand to a big 44-in. x 32-ft. double-screw fines washer. The sand, now thoroughly scrubbed, is sent finally to the third of the plant's four radial stackers. While only one size of sand is processed now, the scalping tank can be arranged to make three fractions. The plant's storage capacity is about 50,000 tons of sand; perhaps a third of this total is stored over the 540-ft. reclaim tunnel.

Largest gravel size reaching the washing plant is normally 1 in. The top-size fraction from the big washing screen, 1 x ¾-in., goes to a double log washer for further cleaning and polishing. Middle fractions, commonly ¾ x ½ in. and ½ in. x 4 mesh, are put through a single-screw coarse washer.

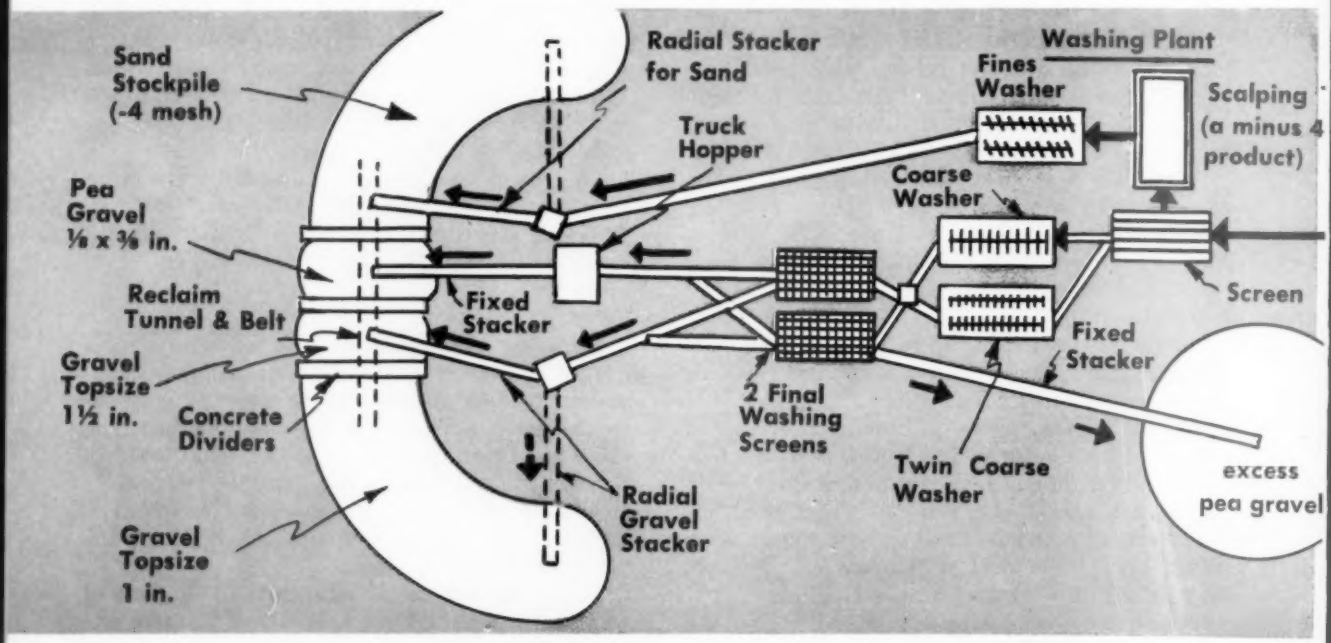
Final washing for these three largest fractions takes place on two more vibrating screens. Before dropping to the two screens, the three fractions are reblended together and then split by a bifurcated chute. High-pressure water does the cleaning job. Some sand does stick to the gravel, and these minus ⅛-in. fines from the two final screens are sent to a catch basin. A pump takes the sand slurry from the basin back to the top of the first washing-plant screen.

Usually two sizes of washed gravel are stockpiled at Warrenville, 1 x ⅜-in. large aggregate and ⅜ x ⅛-in. pea gravel. The smaller fraction is belt-conveyed to a truck load-out hopper and can be sent on from here to storage over the tunnel, if desired. Large gravel is deposited by the fourth radial stacker either over the reclaim tunnel or on the ground. Since gravel of both 1-in. and 1½-in. top size is in demand, the Warrenville plant has a concrete divider to provide a place for each.

A problem of water drawdown in the area caused a few anxious moments early in the plant's operation. During 1958, when 800,000 tons of material were shipped, the plant used 3,000 gpm. of water to wash sand and gravel. It was obvious that the water table in the area would not stay at the desired level with this amount being used.

Settling ponds for reclaiming wash water proved to be the solution. Two large, four-acre ponds and three smaller ones were built on the 300-acre site. They now effectively clear used wash water of even minus 200-mesh silt and so make water reuse practical. So effective is the system that the 266-ft. well on the site now is seldom used. Here's a saving in pumping costs that's also excellent public relations!

The 540-ft. concrete reclaim tunnel makes use of duplex gates to control flow of finished sand and gravel. An operator in a control shed atop the



tunnel's discharge end controls all tunnel rehandling with push buttons.

The reclaim tunnel control shed is one of four stations from which all parts of the plant are push-button controlled. The others are located at the truck-dump hopper, dry crushing-screening tower and wash plant tower.

A saving in labor is but a small part of the benefit gained from the central-control design. Four equipment operators in the pit, the four plant control men, a truck scale operator and Superintendent Gray are the only men needed to operate the plant. However, maintenance men and the tractor-shovel and clamshell operators now needed for rehandling gravel add to the total work force. The complete operating staff for one plant shift is 20 men.

Loading out of ground-storage stockpiles takes two 3-cu. yd. tractor-shovels and a 1½-cu. yd. crawler-mounted clamshell crane. Soon all truck loading will be done without rehandling—truck hoppers will be added to complete the process.

Other features of the plant indicate the detailed thought that went into its design. All electric lines have been laid underground so there's no danger of a crane or shovel putting the plant out of business by breaking a power line.

Soon Elmhurst-Chicago, one of the Chicago area's major concrete products producers, will install a concrete premix plant at the Warrenville site, to be supplied with aggregates from either the firm's Elmhurst stone plant or from the adjacent sand and gravel plant.

Ready mixed concrete plants are in operation or are soon to be installed at each of Elmhurst-Chicago's four aggregates plants. With its good location and high-efficiency features, the new Warrenville sand and gravel plant has already proved to be a profitable addition to the Elmhurst-Chicago chain. **END**

EQUIPMENT REFERENCE

In the pit:

Power shovel Model 362, 1½ cu. yd.	Marion Power Shovel Co., Div. of Universal Marion Corp.
Crawler-mounted dragline, 1½ cu. yd.	
Rear-dump haulers, Model 80FD, 15-ton (2)	Euclid Div., GMC

Crushing and screening plant:

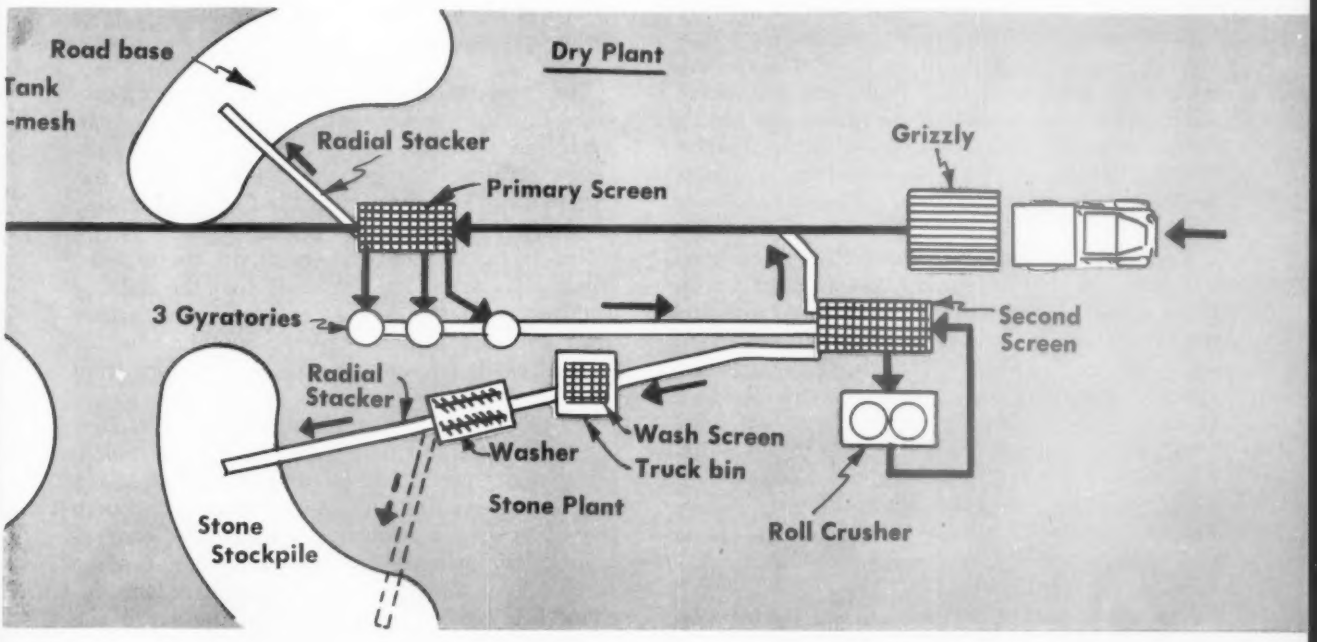
Reciprocating plate feeder 3 x 6 ft.	Smith Engineering Works
Variable-speed drive for feeder	Reeves Pulley Div., Reliance Electric and Engineering Co.
Vibrating screen, 3-deck, 6 x 16-ft.	Hewitt-Robins
Gyratory crusher, Model 16B	Smith Engineering Works
Crusher, Model 48S Gyrasphere	
Crusher, 3-ft. short-head cone	Nordberg Mfg. Co.
Roll crusher, 42 x 24-in. twin roll	Lippmann Engineering Works
Belt conveyors	Barber-Greene Co.
Design engineering	Smith Engineering Works

Washing plant:

Vibrating screen, 3-deck, 6 x 16-ft.	Hewitt-Robins
Scalping tank	Eagle Iron Works
Fines washer, 44 in. x 32 ft. double screw	
Coarse washer, 36 in. x 30 ft. double log	
Coarse washer, single screw, 36 in. x 25 ft.	
Vibrating screens, 5 x 14 ft. 3-deck	Hewitt-Robins
Belt conveyors	Pioneer Engineering, Div. of Poor & Co.
Engineering	Eagle Iron Works; Pioneer Engineering, Div. of Poor & Co.
Electric controls (entire plant)	Allen Bradley Co.

Rehandling equipment:

Dozer, D8	Caterpillar Tractor Co.
Tractor shovels, 3 cu. yd.	Clark Equipment Co.; The Frank G. Hough Co.
Clamshell crane, 1½ cu. yd.	Marion Power Shovel Co., Div. of Universal Marion Corp.



Canadian lime plant boosts quarry capacity 500 percent

A MODERNIZATION and diversification program recently completed at the Beachville Plant of Cyanamid of Canada Limited has upped quarry capacity from 200 tph. to nearly 1,000 tph. This 500-percent increase not only meets the greater chemical limestone needs of the company's voracious electric furnaces at Niagara Falls, Ont., but supports a new lime kiln and an expanding merchant limestone business.

For many years, quarry production was closely geared to the company's internal needs for limestone. Only the by-products were marketed. Now the crushing and screening plant is operated independently of the electric furnaces. The plant makes and ships 10 production sizes of limestone in addition to the 7 grades of fines which have been produced regularly for nearly 30 years.

The new lime kiln opens up diversified markets for the quarry's production. Prime Canadian market for lime is the Blind River District, a concentration of uranium mines, mills and processing plants. This market takes much of the new plant's output of pebble lime, but there is ample capacity in the 335-tpd. rotary kiln to make lime available to other segments of Canadian industry.

Three major steps were carefully programmed to transform the 50-yr.-old plant and quarry into an efficient, high-capacity operation. First step was to completely re-equip the secondary screening and crushing area to handle the stepped-up quarry production and to produce lime-kiln feed and the wide range of marketable sizes of limestone. These are now 9 x 5 and 5 x 3-in. blast-furnace burden, 2 x 1½-in. electric furnace and merchant lime-kiln feed, 1½ x 1 and 1 x ⅝-in. rotary lime-kiln feed sizes, ⅝ x ⅛ in. for cement plants and ⅛-in. x 0 or No. 10 x 0 fines for sintering furnaces or for fertilizer makers.

The second part of the program was the installation of a new, larger primary crusher in the quarry and the purchase of additional equipment to keep up with its rated capacity of 1,000 tph. The third important addition to the plant was the single 10½ x 350-ft. coal-fired rotary kiln, complete with its supporting equipment—conveyors, elevators and storage bins—to bring in stone and prepare pebble lime for shipment.

Plans for further improvement are still under consideration. A new pneumatic drill has been purchased to replace the two ancient churn drills in the quarry. This new unit will have no difficulty putting down 6-in. holes in the 75-ft. ledge of Devonian Limestone well ahead of the shovels and trucks. Eventually, the fines processing, drying and bagging department will have to be redesigned and re-equipped to efficiently process the increased volume of fine sizes as the quarry swings into maximum production.

The dramatic second phase of the expansion program saw the replacement of a great deal of obsolete and inefficient quarry equipment. A narrow-gauge railroad was scrapped, for it could not economically keep pace with the five-fold increase in production. Track and rolling stock were replaced by a fleet of five end-dump trucks. The trucks have speed and flexibility that the railroad could never match, and as the face gets farther away from the primary crusher another truck or two will easily maintain the flow of limestone from the shovels.

A belt conveyor system was installed to replace the slow, hazardous, outmoded skip hoist which, for so many years, had laboriously hauled 10-ton rail cars above the rim of the quarry to dump them into the old primary crusher. A belt conveyor from the primary crusher builds a 50-ft.-deep surge pile on the floor of the quarry. A long, inclined belt conveyor reaches from the surge pile

A new lime kiln opens up diversified markets for Cyanamid of Canada Ltd.'s increased quarry production

by Elwood Meschter

Quarry near Ingersoll, Ont., looking westward—shovel working 75-ft. face

Cyanamid's 10½ x 350-ft. rotary kiln to make nearly 335 tpd. of quicklime

Secondary crushing house on the rim of the quarry

to the top of the secondary crusher building to keep the screening and secondary crushing part of the plant operating independently of the primary crusher and haulage trucks.

Limestone in the quarry averages better than 99 percent calcium carbonate in the top 75 ft. of the ledge. Even the fines, where any impurities are normally concentrated, always assay better than 97 percent.

The existing 150-acre quarry is just south of the mainline tracks of the Canadian National Railways. North of the tracks the company has about 500 acres in reserve, good for another century of operation. A contractor removes the 25 ft. of overburden, which is mostly sand and gravel from an old river bed. Overburden gets deeper north of the tracks until it is nearly 100 ft. deep. When this reserve area is opened up, Cyanamid will drive a haulage tunnel beneath the railroad to enable trucks to reach the primary crusher.

About every 2 weeks a 21-hole blast brings down 50,000 to 60,000 tons of well-shattered stone ready to be loaded out. Two shovels, a 2½-cu. yd. and a new 4-cu. yd. unit, will keep the trucks hustling to keep up with the primary crusher. The new shovel was part of the new equipment installed to expand quarry capacity, as were the two 18-ton and three 22-ton end-dump trucks.

A 42-in. gyratory crusher easily handles run-of-quarry rock and reduces it to minus 9 in. Crushed material drops to a heavy-duty vibrating feeder which meters it uniformly to the inclined belt conveyor for the trip to storage. The feeder not only loads the conveyor uniformly but also protects the belt from the impact of sharp pieces and from surges of smaller rock. Two vibrating feeders under the surge pile load the inclined belt conveyor for the trip out of the quarry to top of a crusher house high above the edge of the quarry.

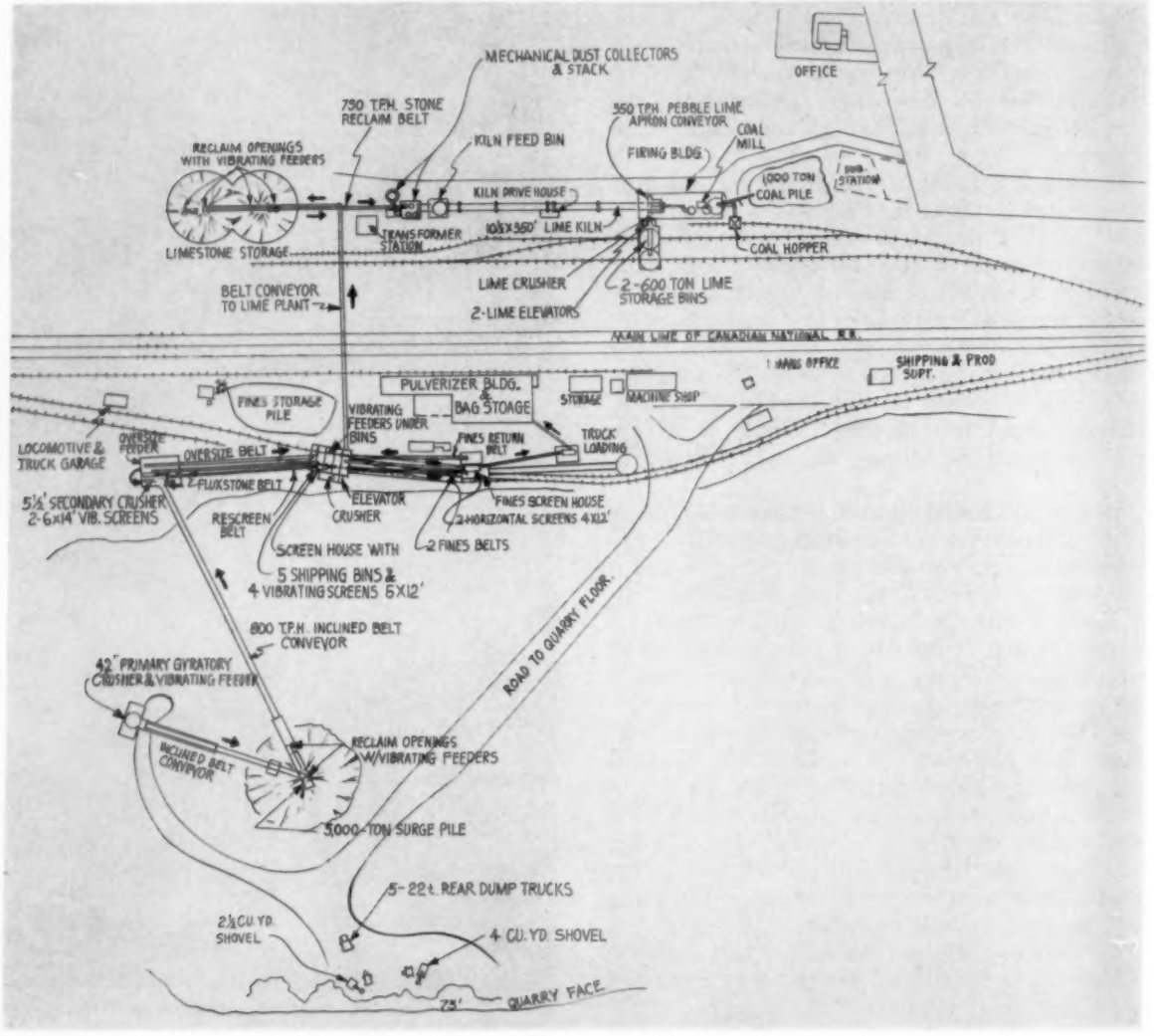
Lime plant *continued . . .*

These two feeders are controlled by a man standing near the discharge end of the belt conveyor. He can operate one or both of the feeders and can vary the rate of feed of each one. In this way he can control the flow of material, speeding it up when blast furnace burden is processed, or throttling it down to prevent surging crusher and screens when smaller sizes are made.

Run of quarry rock is first dropped to a 6 x 14-ft. double-deck vibrating screen. All plus 9-in. stone from the top grizzly deck is conveyed to a 5½-ft. gyratory crusher usually set at 2 in. Material from the lower deck is the 9 x 5-in. blast furnace burden. It is dropped to a heavy-duty vibrating feeder to be loaded on one of three long, parallel inclined belt conveyors for the trip to the top of the rail shipping bins. Since this size is rarely shipped, it is usually combined with the oversize and taken to the secondary crusher to be reduced to more saleable sizes.

All through-screen stone is conveyed to a second 6 x 14-ft. double-deck vibrating screen. The top screen of this unit takes off the 5 x 3-in. stone which is fed to the middle conveyor to be taken to its rail shipping bin. This size, too, is shipped infrequently. For everyday operation this heavy rock is diverted to a short conveyor to be taken to the gyratory crusher. Material over the lower deck can be taken to storage on the middle belt, sent to the crusher or dropped directly to the third belt in the system where it joins all the crushed stone on its way to the top of the screen house above the storage bins.

At the top of the screen house the flow of



crushed stone from the third belt conveyor is split between two 5 x 12-ft. double-deck vibrating screens. These two screens provide more screening area and greater efficiency in sizing the smaller sizes of stone than a single large unit. At the same time, they permit the material to be spread across the width of the storage bins below. The screens make it possible to make or blend other sizes to meet a particular requirement.

Oversize from both screens is dropped to a short cross-conveyor, taken to the edge of the bins and chuted to a 36-in. gyratory crusher far below at ground level. To protect the crusher from the impact of stone falling this distance, the bottom of the chute is fitted with a small vibrating feeder which meters stone to the crusher. Crushed material is elevated back to the top of the screens by a continuous bucket elevator.

Three sizes of stone are stored under the vibrating screens: the 2 x 1½-in. for the electric furnaces at Niagara Falls and the two sizes for the rotary lime kiln, 1½ x 1 and 1 x ⅝ in. Electric furnace feed is made on the lower deck of the screens. Kiln-feed sizes are made on another pair of 5 x 12-ft. double-deck vibrating screens, taking all through-screen material from the first pair of screens. All through-screen minus ⅝-in. stone is conveyed to a fine-screening tower where the ⅝ x ⅛-in. cement rock is scalped out and stored for rail shipment to Canadian cement plants.

The fine-screen section is equipped with a pair of 4 x 12-ft., single-deck horizontal vibrating screens. The slotted wire decks of these screens make three products—cement rock, ⅛-in. x No. 10 mesh sintering machine feed rock and minus No. 10 for the fines processing department.

The lime plant is an independent operation, drawing on the crushing and screening plant only to replenish its stockpiles of stone. Kiln stone is brought to stockpiles by a belt conveyor that spans the railroad. Each size of stone is pulled out of storage by a vibrating feeder and put on a short-belt conveyor that loads the bridge conveyor. This conveyor can send stone to storage or can divert it directly to a storage bin above the feed end of the rotary kiln. Two sizes of stone are stored, permitting the lime plant to use the surplus size. The kiln operator has the opportunity to use whichever size can improve burning conditions.

Each of the two storage piles holds about a week's supply of stone. Two mechanical vibrating feeders under each pile draw material down to a collecting belt in a reclaim tunnel under the storage piles. This belt conveyor takes stone to the top of a 200-ton circular steel storage bin above the feed-end of the kiln. This bin holds about a shift's supply of kiln-feed stone.

Limestone is fed to the kiln by a 5-ft.-diam. rotary table feeder under the bottom of the bin. The rate of feed is controlled between 20 and 40 tph. by the burner to regulate the depth of material in the kiln.

Rated capacity of the 10½ x 350-ft. rotary kiln is 335 tons of pebble lime a day. However, with close supervision and automatic controls on the kiln, output has often approached 360 tpd. Consumption of bituminous coal has averaged about ¼ ton of coal per ton of quicklime.

Quicklime is discharged from the kiln through a set of 10 cylindrical cooler pods mounted on the outer shell of the kiln at the discharge end. Ambient air is drawn through these 4½-ft.-diam. tubes, contacting the red-hot lime which has just been discharged from the kiln. During passage through the 22-ft. tubes the lime is reduced to less than 150 deg. F., and the incoming air—now well-heated—enters the kiln as secondary combustion air.

The cooler tubes discharge lime to an 18-in.-wide apron conveyor under the kiln. This conveyor takes lime to one of two centrifugal bucket elevators or to a small lime pulverizer which drops lime into the boot of one of the elevators. The bucket elevators lift the pebble lime to the top of a pair of 600-ton-capacity circular steel storage bins where a screw conveyor puts it into storage. A long chute permits the elevators to drop lime to a truck loading station at ground level. **END**

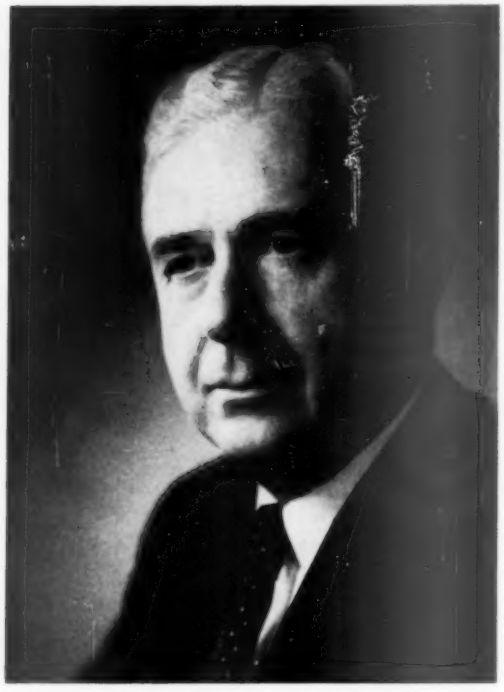
MAJOR EQUIPMENT IN USE AT THE BEACHVILLE PLANT

In the quarry:	
Shovels, 4 cu. yd.	Lima Works, Baldwin-Lima-Hamilton Corp.
2½ cu. yd.	Northwest Engineering Co.
Drill, 6-in. down-the-hole	Canadian Ingersoll-Rand Co. Ltd.
Trucks, (3) Euclid 22-t.	Euclid (Great Britain) Ltd.
(2) Mack 18-t.	Mack Trucks of Canada Ltd.
Bulldozer	Ford Motor Co. of Canada Ltd.
Crusher, 42-in. gyratory	Traylor Engineering & Mfg. Co.
Vibrating feeders (3)	Syntron (Canada) Ltd.
Belt conveyor idlers	Link-Belt Ltd.
Conveyor belts	Dominion Rubber Co. Ltd.
In stone plant:	
Vibrating feeders (2)	Syntron (Canada) Ltd.
Vibrating feeders (3)	Jeffrey Mfg. Co. Ltd.
Vibrating screens (4) 5 x 12-ft., (2) 6 x 14-ft.	W. S. Tyler Co. of Canada Ltd.
Vibrating screens (2) 4 x 12-ft.	Nordberg Mfg. Co.
Gyratory crusher, 5½-ft. std.	Nordberg Mfg. Co.
Gyratory crusher 36-in.	Smith Engineering Works
Belt conveyor idlers	United Steel Corp. Ltd.
Belt conveyor idlers	Link-Belt Ltd.
Conveyor belts	Gutta Percha & Rubber Ltd.
In lime plant:	
Lime kiln, 10½ x 350-ft.	F. L. Smidth & Co. of Canada Ltd.
Belt conveyor system	Stephens-Adamson Mfg. Co. of Canada Ltd.
Dust collectors, mechanical (2)	Buell Engineering Co., Inc.
Lime crusher 18 x 12-in.	Jeffrey Mfg. Co. Ltd.
Lime elevators (2)	Jeffrey Mfg. Co. Ltd.
Apron conveyor 18-in. x 39-ft.	Stephens-Adamson Mfg. Co. of Canada Ltd.
Coal elevator	Jeffrey Mfg. Co. Ltd.
Coal storage tank	Plate & Structural Steel Ltd.
Coal mill 6½ x 23-ft.	F. L. Smidth & Co. of Canada Ltd.
Design engineer and general contractor	Catalytic Construction of Canada Ltd.

Vincent P. Ahearn, NSGA Executive Secretary: "Future political strategy and political tactics add up to one big factor—spend and spend; something for everybody."

Kenneth E. Tobin, Jr., NSGA Associate Executive Secretary, on mobile radio: "The sand and gravel and ready-mixed concrete industries have the responsibility of helping to set up and maintain a good frequency coordination system for Special Industrial Radio Service."

NSGA President
E. Phil Gemmer, Texas Construction Material Co.



NSGA boasts best off-show-year convention

YOU MISSED THE BEST off-show-year sand and gravel convention of record, if you didn't get to New Orleans, La., February 16-19. In the words of E. Phil Gemmer, president of National Sand and Gravel Association, NSGA holds a convention "that puts work above refreshment, and. . .there's a place for both (but) over-indulgence in either is seldom observed." And that's the kind of a convention it was.

The program was diversified enough to interest everyone in the sand and gravel industry. It touched the practical, with sessions on down-to-earth operating problems. It gave current information on technical problems, showing how modern research is finding solutions for them. General subjects such as insurance and pension plans were ably covered, as was communications and even employe credit unions. A full session was devoted to public relations.

If you were there, you heard an excellent projection for future sand and gravel markets and a review of the tax situation. Highlights of the meeting—as usual—were cracking good talks by Vincent P. Ahearn on federal government's 1959 decisions, and an appraisal of industry bargaining with labor unions. The 29th annual convention of the National Ready Mixed Concrete Association was held simultaneously with the 43rd NSGA meeting.

Public relations remains an important topic. The committee handling this work, headed by E. K. Davison, has been extra-busy for the past couple of years. Results have brought real contributions

Please turn to page 100

When it's unhandy to position

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POSITION WELDING — Here's a new Stoody Hard-Facing Rod for use on big equipment — parts that can't be positioned readily for welding! Stoody 1030 is easy to weld either vertical or downhand. The arc is smooth and stable with little smoke and low spatter. Runs AC and DC. Welds to carbon steel, manganese steel and weldable cast iron.

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Rock Products safety trophies were presented to: (left to right) Quentin Best, Consolidated Rock Products Co., Class A award; P. W. Gifford, Gifford-Hill & Co., Inc., Class B award, and Robert Patton, Davon, Inc., Class C award

NSGA meeting *continued from page 98*

to the industry and, specifically, 1958 was a banner year. Just completed, but not yet available for distribution, is an authoritative piece on industrial dust and noise. The survey was conducted under the auspices of the PR Committee, NSGA, by Industrial Hygiene Foundation of America, Inc. A major source of dust was found to be unpaved roads near a plant, or paved roads covered with dirt. Clean them up, it was suggested, and you probably will relieve many of your current complaints. But, the sand and gravel industry is no worse than most cities, so far as air pollution is concerned.

Dr. H. H. Schrenk, Industrial Hygiene Foundation, spoke on the problem of dust and noise. He believes that much can be done to reduce noise in sand and gravel plants. Recommended practices include: use of noise reflecting barriers, proper mounting of equipment, good maintenance practices, good mufflers on trucks and education of personnel.

The Association's work on public relations, according to Mr. Davison, has created much goodwill before local planning and zoning groups. NSGA has been welcomed into the American Society of Planning Officials, indicating the importance of the PR work the Association has done.

If you're interested in public relations and are a member of NSGA, you have another rare service awaiting you. The PR Committee will make available soon a brand new PR ring-book binder. It will contain sections on rehabilitation of land, legal aspects of zoning, on growing problems of zoning restrictions and, eventually, on the noise and dust conditions. It will be chock full of important PR information which will be added to from time to time. Mr. Davison stated that his committee will focus attention in the future on trucking problems, evaluation of the industry in national and local economies and on the evaluation of reserves of sand and gravel.

Company annual reports have value as a public relations tool and as a sales tool, according to William E. Clark, Pittsburgh, Pa. They answer questions of the various publics the company serves, including employes, stockholders, customers and the public at large. Such reports can help to bring in new stockholders and to recruit employes and customers; they can help maintain better community and employe relations.

What's ahead for the sand and gravel industry? It will be a pretty good year volumewise, but you may have quite a time in squeezing out a profit. New plants are being built, either because reserves are running low or more adaptability to a flexible construction program is desirable. Most producers are planning to expand or to rehabilitate existing plants. They'll spend money to do so. But the real problem this year—and the next, and next—is that of staying in business and making a reasonable profit. The cost of doing business continues to rise.

These factors were pointed out by William Moore, Boston, Mass., who gathered the information from a questionnaire circulated among producers all over the country. He concluded, though, that he thinks the ability of the American business man is sufficient to conquer the big challenge.

Tax developments in 1958 were fully covered by John T. Sapienza in his usual excellent style. Most of these developments have been reported to members through memos from the Washington Staff. But there's one thing for sure: the Treasury Department is continuing its never-ending work on revision of percentage depletion. Now, it's asking Congress to delete the marketing processes that are so famous in the cement and brick cases and to turn to consideration of the mining processes. Its recommendations are favorable to sand and gravel, on the whole. The proposed bill includes screening and drying as ordinary treatment processes, and grinding is allowed. But, there may be lots of argument on the cut-off point.

Future political strategy and political tactics add up to one big factor—spend and spend; something for everybody. That's if the Democrats in Congress get their way, of course. And with such clear majorities on both sides, there isn't much doubt that they will. But Presidential veto can stand in the way of too much spending over income. Eisenhower did a constructive job on last year's budget through the veto route. These projections were highlighted in Mr. Ahearn's analysis of the political future.

Please turn to page 104

KENNEDY

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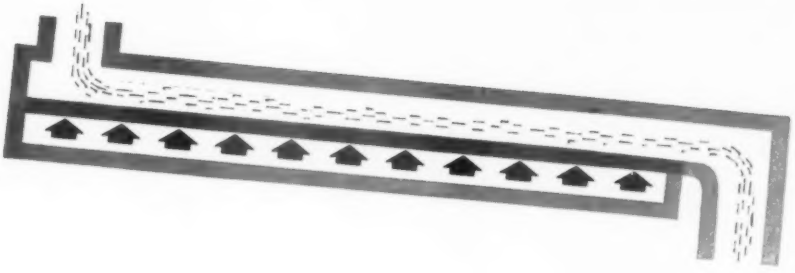
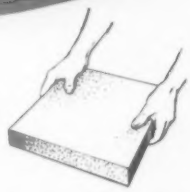
air-gravity conveyor
provides the answers to
Dry Solids Conveying





The special porous plate is exclusive with KENNEDY AIR-FLOAT. It is strong, resistant to abrasion and temperature and has a smooth surface texture.

Sections are ruggedly designed, formed on modern production equipment and completely assembled before shipment.

Q. How does AIR-FLOAT work?

A. *The dry material to be conveyed is fed on to a smooth, rigid, porous plate through which low pressure air continuously diffuses. Because the conveyor is inclined about 6 to 8°, the aerated material flows by gravity.*

Q. What distinguishes the KENNEDY AIR-FLOAT from other air-gravity conveyors?

A. *Primarily, the special porous plate. Also the casing is of heavier construction, flanged and channeled for greater rigidity.*

Q. How is this special plate better than other porous media?

A. *The AIR-FLOAT porous plate has literally millions of tiny pores through which the air diffuses uniformly for thorough aeration of the conveyed material. The plate is thicker, stronger, temperature- and wear-resistant, and has a very smooth surface texture.*

Q. How does this improve conveying?

A. *AIR-FLOAT has a much higher capacity than competitive air-gravity conveyors. Blind spots are eliminated and the angle of inclination is less critical.*

Q. What about maintenance?

A. *The KENNEDY AIR-FLOAT is the nearest thing to a completely maintenance-free conveyor that has ever been devised.*

Q. Can turns be made?

A. *Direction changes up to 45° are made with standard pieces. These can be combined for greater angles.*

Q. Are accessories available?

A. *Yes. End and side discharge boxes, splitters, control gates, transitions, bin extractors and required blowers can be provided.*

Q. Have KENNEDY AIR-FLOAT Conveyors been fully tested and proven?

A. *Yes. For more than 12 years AIR-FLOAT Conveyors have been successfully used in KENNEDY-designed cement and lime plants. With this background of experience, KENNEDY is now making AIR-FLOAT available to industry, mass producing it to sell at competitive prices.*

For more information on AIR-FLOAT, ask for Bulletin 58-K.

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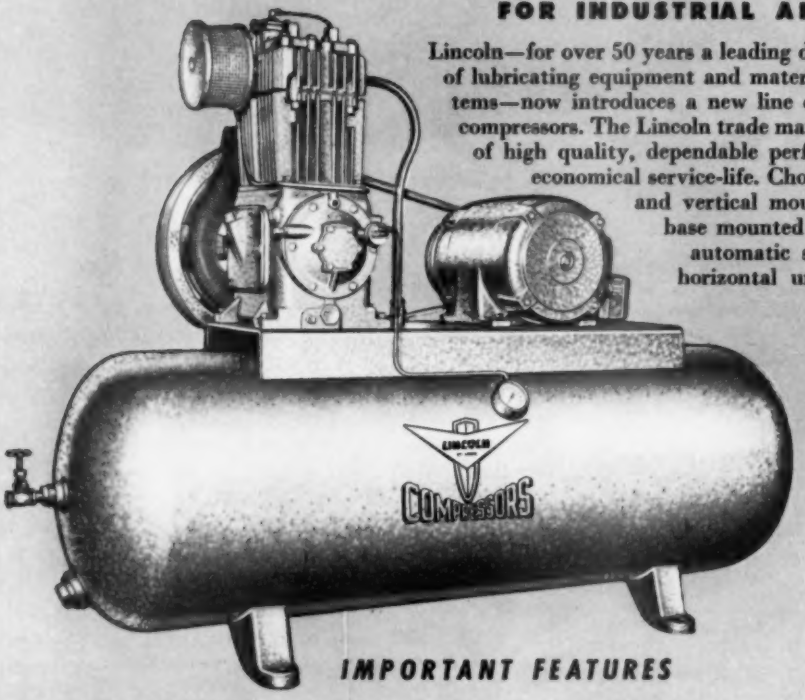

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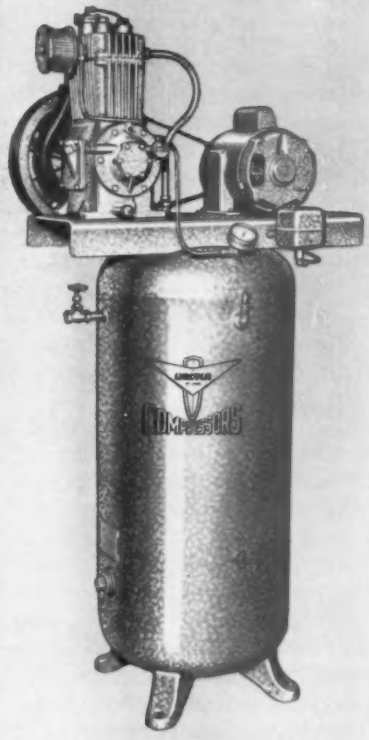

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67 Different Models available . . . 4 Air Motors . . . 100% interchangeable with pump tubes. The advanced design features of Lincoln's new Power-Master series of air-operated pumps provide unmatched versatility, unlimited applications, for handling materials from light oils to heavy fibrous greases and viscous coatings, sealers and mastics.

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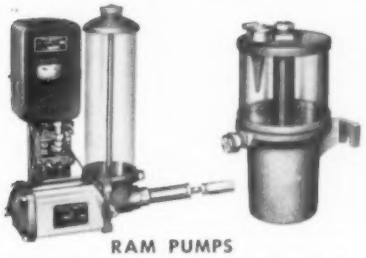
- **STURDY CONSTRUCTION**—Plunger and bushing of case hardened nitraloy steel. Pump outlet body all-steel, hydrogen brazed. All moving parts of tough, heat-treated steel.
- **POSITIVE PERFORMANCE**—Air motor operation is 100% pneumatic, no springs. Stall-proof, leak-proof, pre-lubricated air valve. Toggle action for positive tripping.
- **SIMPLIFIED MAINTENANCE**—Entire mechanism can be assembled only "hand tight". Easy to disassemble, invaluable when using compounds which may "set up", such as paints and plastics. Air piston and cylinder require no oiling . . . minimum friction . . . no leather cups.

AUTOMATIC CENTRALIZED SYSTEMS



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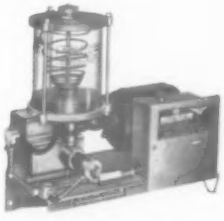

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NSGA meeting *continued from page 100*

But who knows what Congress will do? Mr. Ahearn doubts that Congress will do anything this year to cope with abuses in labor unions. School construction and civil rights bills may not get through Congress this year. Congress will spend more money—on highways, urban renewal, public housing, airports, assistance to depressed areas, conservation and water development, defense in inner and outer space and for military and economic aid to other countries. The budget will not be balanced.

Safety awards winners in 1958—those that received the ROCK PRODUCTS trophies—include the Irwindale Plant of Consolidated Rock Products Co., Class A. Class B trophy was won by the Wilson Plant, Gifford-Hill and Co., Inc. The Basic Construction Materials Plant of Davon, Inc. won the award for Class C. Quentin Best, P. W. Gifford and Bob Patton accepted the awards for their respective companies in the order as listed.

Operating problems got a thorough going-over at Wednesday morning's session. Beneficiation and haulage were highlighted by presentation of specific operating case histories. An unusually good paper on cost studies on wire cloth and punched plate for vibrating screens was given by W. L. Price, Pittsburgh, Pa.

Looking generally over a sand and gravel operation years ago amazed Irving Warner, Jr., Philadelphia, Pa., at the number of separate operations required to process what he called "a rather common and ordinary raw material." The operating problems are multiple and diversified, from quarrying or dredging to railroading, which makes a difficult operating situation for a single superintendent who normally controls the whole. Mr. Warner divided these problems into: mining or excavation, transportation, processing, miscellany of materials handling problems and maintenance.

Various problems encountered at his company's plant near Morrisville, Pa., were discussed by E. Norman Bernhardt, Jr., Warner Co. Area of the property is five miles long, divided into two parts by a railroad and a highway. The problem was how to select proper equipment and processes for blending feed from a dredge and a new area to be opened, to effectively mine, transport and process 1,200 tons per hour. Thorough studies were made of every available type of equipment and method. The method selected for each phase was based on the natural and operating conditions of the property in conformance with the planned production output. In this case, full preplanning was effective.

One set of regulations for transportation methods cannot be applied generally to the whole sand and gravel industry because of differing conditions. But, regardless of these conditions, merits of each type of transportation equipment must be studied in detail to effect an elimination of high operating costs. These were the conclusions of A. H. Baxter of Toronto, Ont., Canada, in his paper on conveyor belt versus truck haulage.

You can't purchase screen cloth or plate like nuts or bolts, according to Mr. Price. The more familiar a buyer is with the actual operational details, the better selection he can make. The worst thing a producer can do is to buy screen cloth or plate, install it and forget it.

Jigging as a means of beneficiation for gravel is an established fact. But the methods used and economies of jigging should be weighed in every instance before final selection. These are conclusions of William E. Hole, Jr., who spoke on the "Application of Jigging for Gravel Beneficiation." His company installed a Baum-type air-operated 2-cell jig to remove shale and chert from one-half of the 2 x ½-in. feed. The jig was selected because it had great versatility and could operate at 150 tph. and maintain a good separation. A second jig was installed to process the remaining half of the 2 x ¼-in. product.

Results showed that a most acceptable product was produced, and that output could be boosted to 175 or 200 tph., but with some decrease in efficiency of cleaning. Tests on the feed showed 3 percent shale and 7.8 percent chert. The final processed product showed 0.7 percent shale and 4.5 percent chert. Experience to date indicates that cost of labor and parts in operating the jigs is from 5 to 10 cents per ton.

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NSGA meeting *continued from page 104*

Markets for gravel were given nearly a whole session. The railroad ballast market has dwindled from one-third of total gravel output in 1925 to only 5 to 7 percent now. Maybe the market is not profitable for sand and gravel. According to Stanton Walker, NSGA staff, railroad ballast needs to be shaped and graded to give stability. Angular gravel and fines have a market on roadways, not on the main line. Without fines, it competes for main line business with crushed stone.

Maybe there's more hope for an increase in this market, based on the results of a research project now being carried out. Asphalt is being used with gravel for a penetration coating to see how track stability can be improved. If it works, the ballast market for gravel should improve.

Use of gravel in bituminous mixes in Louisiana was discussed by James C. Breaux, of the La. Dept. of Highways. The state is short of gravel and had to find a way out of the problem. An experiment with use of round aggregates didn't pan out. The solution has been a gravel mix with fines, using a crushed ¾-in. material (75 percent crushed faces) in the wearing course on roads. Now, the state is able to use the aggregates available and will continue to do so.

One of the first obligations of any company seeking to continue its growth is to recognize the potential for new production development. And that's how Southern Materials Company of Virginia got into the soil aggregates business. Raymond F. Wingo, Jr. told how his company built a plant to make such material for highway construction. Basically, the operation consists of blending three materials together, adding water and calcium chloride, mixing in a pug mill and discharging directly into the trucks for haulage to the job.

Use of mobile radio got a full session at the meeting. An Association survey gave credence to the possible projection that nearly 100 percent of operations in the sand and gravel and ready-mixed concrete industries could use mobile radio in the next few years. The developments in mobile radio during the past 12 months, as reported by Kenneth Tobin, NSGA staff, give both industries eligibility for use to the extent previously requested by the Associations. But the industries have the responsibility of helping to set up and maintain a good frequency coordination system for the Special Industrial Radio Service. If this job is not done, the FCC could eliminate the SIRS, which would be disastrous to both industries.

Millions of dollars are invested in mobile radio in the sand and gravel and ready-mixed concrete industries. At last count, 415 licensed operators use more than 9,000 radios as reported by W. J. Hicklin, Jr., Jacksonville, Fla. Shortwave radio, he said, is highly technical equipment, and maintenance plus care are important items to their successful use. Most equipment available is tough, rugged and well adapted to the beating it takes when installed in mobile units used by both of the industries.

Discussion of technical problems was given a complete session at the convention. A great amount of work is being done and will be done in the Associations' laboratory. Stanton Walker, Director of Engineering for both Associations, reported the many wide problems that will be studied. He included a brief discussion of two laboratory tests, each of which was given in a separate paper during the session by his co-workers D. L. Bloem and R. D. Gaynor. One test, on the effect of the maximum size of aggregate on concrete strength, showed no particular advantage, from the standpoint of strength, from use of very large sizes of aggregate. If smaller sizes of coarse aggregate can be substituted for larger ones, without hurting concrete quality, Mr. Walker believes the fact to be of great importance to the industry.

Tests on concrete admixtures show preliminary results indicating the setting time of concrete can be retarded for long periods of time without sacrificing strength at conventional ages of concrete. Full description of the laboratory test was given by Mr. Gaynor.

Other subjects covered by Mr. Walker included aggregate beneficiation, substandard aggregates, concrete control, ready-mix concrete for pavements, flexural strength and bituminous mixtures.

The mineralogical properties of aggregates were discussed by Bryant Mather. He suggested that producers have a working knowledge of the rocks and minerals that make up the aggregates they process, sell and use. The best way to get that knowledge, he suggested, was to study the many valuable publications on the subject made available by the two Associations.

The Group Insurance Plan of the Associations has been a valuable asset in increasing the memberships of the two groups. As of last Fall, 80 member companies and the Associations' staff were participating in the plan. Number of employes insured is 2,041 of whom 1,233 also have dependent coverage. Mr. Tobin accented the success the plan experienced during the last policy year. Similarly, Donald Shepherd reported much progress with the NSGA-NRMCA Pension and Retirement Plan. Such programs, he feels, represent an investment that pays dividends to participating employes and to management.

A highlight of the final session of the meeting was Mr. Ahearn's report on "An Appraisal of the

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Three factors govern optimum gypsum content of cement

by W. E. Haskell*

THERE IS ALMOST UNANIMOUS AGREEMENT among cement chemists that portland cement with an optimum gypsum (SO_3) content is superior in several ways to one manufactured from the same clinker that has a more or less amount of this ingredient. It is a fact that not all producers of portland cement are adding this optimum amount of gypsum to their product.

There are a number of reasons why this is so. One reason is that a quick and accurate method for the determination of optimum SO_3 has not been decided upon. Another is that specification writers have not yet established a reasonably high upper SO_3 limit. Investigational work is still being done, and the whole subject is in the category of unfinished business.

Researchers believe that the optimum amount of SO_3 is governed by the proportions of C_3A ($3CaO \cdot Al_2O_3$) and alkalies (Na_2O and K_2O) in the clinker, and the fineness to which the cement is ground. If this is true, we can expect that a quantitative expression for such a relationship could be found in any reasonably complete set of experimental data.

This is an attempt to show such a correlation, using three sets of data from the literature. Naturally, there are exceptions that may be taken to such a procedure. They will not be discussed here, and it is intended that the results shall speak for themselves.

Three widely separate sources and four of the recognized types of portland cement are among the thirty-one individual cements in the study. The relationships brought out confirm our belief that C_3A, the alkalies and the fineness of grind are the three major factors governing the optimum SO_3.

Statistical correlation does not prove a cause and effect relationship. But if a cause and effect relationship does exist, the coefficient of determination will indicate to what extent the variations in the dependent variable are explained by the variations in the independent variable or variables. Regression coefficients will provide an estimate of the relative effect of the independent variables.

On Table I we tabulate the data examined. "Lerch data" is Table XV from William Lerch's outstanding paper, "The Influence of Gypsum on the Hydration and Properties of Portland Cement Pastes," Proceedings, American Society for Testing Materials, Vol. 46, p. 1252, (1946).

The twelve clinkers investigated cover a wide range of composition for both C_3A and the alkalies. The experimental SO_3 values represent an "optimum percentage . . . not higher than indicated by any of four methods." The four methods referred to are:

* For proper retardation (heat curves)
* For highest strength
* For lowest contraction
* To avoid abnormal expansion

The fineness of the cements is reported to be approximately 1,900 sq. cm. per g. by the turbidimeter. The source of the data is an excellent guarantee that the analytical results for C_3A and alkalies are reliable and accurate.

Section B of the table, designated as "McCoy data," is used with the permission of W. J. McCoy, Director of Research, Lehigh Portland Cement Co., Allentown, Pa. All of his data is for Type III cements, and the analytical values are for cements and not clinker. The recorded optimum SO_3 results

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*Associate Materials and Research Engineer, Headquarters Laboratory, California Division of Highways, Sacramento, Calif.

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SO_3 content *continued from page 108*

are the average values of the results obtained from tests for strength, shrinkage and expansion. The fineness of the cements was not reported.

ASTM data was taken from the Report of Committee C-1 on Cement through its Working Committee on SO_3 Content, "The Optimum Gypsum Content of Portland Cement," ASTM Bulletin No. 169, October, 1950, p. 39. It includes results on four types of cement. Again, the analytical results are for cements, and not clinker. The optimum SO_3 values reported are the average of all criteria, consisting of tests for least contraction, least expansion and for greatest compressive and flexural strength. The fineness of the cements is shown in Table II.

Lerch's data has obvious advantages over the other two sets, and it was used as a basis for computing a multiple linear equation with three factors—optimum SO_3, C_3A and equivalent alkali as Na_2O. It was the basis for computing a multiple linear equation with four factors—optimum SO_3, C_3A, Na_2O, and K_2O. The three-factor equation is:

$$X_1 = .0950\ X_2 + 1.6364\ X_3 + 1.1841 \qquad (1)$$

in which X_1 = the optimum SO_3 content of the cement in percent, X_2 = the C_3A content of the clinker in percent, and X_3 = the equivalent alkali content of the clinker in percent.

Standard error of the estimate is .2166, coefficient of determination is .9320, and the coefficient of correlation .9654. These two coefficients indicate an extremely high correlation, while the coefficient of determination of .9320 means that about 93 percent of the observed variation in optimum SO_3 can be explained by the variation in the C_3A and the alkali. In these experiments, the fineness of all of the cements is a constant, approximately 1,900 sq. cm. per g.

The linear equation with four variables is: (2)

$$X_1 = .0933\ X_2 + 1.7105\ X_3 + .9406\ X_4 + 1.2288$$

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TABLE I

Clinker	C_3A	Na_2O	K_2O	Equiv. Alk. as Na_2O*	Optimum SO_3 By Test
SECTION A LERCH DATA					
	Clinker Analysis				
15367	14.3	0.17	0.16	0.28	3.0
16823	12.5	0.05	0.25	0.21	3.0
15900	13.1	0.36	0.50	0.69	3.5
15498	11.2	0.31	0.42	0.59	3.0
16843	11.0	1.03	0.06	1.07	4.0
15699	10.1	1.17	0.46	1.47	4.5
16827	8.1	0.04	1.37	0.94	3.5
16890	5.1	0.32	0.02	0.33	1.9
15623	4.8	0.05	0.18	0.17	1.9
15670	2.4	0.05	0.23	0.20	1.9
16839	6.2	1.01	0.10	1.08	4.0
16831	5.7	0.05	1.37	0.95	3.0
SECTION B McCOY DATA					
	Cement Analysis				
A	5.3	0.21	0.54	0.57	3.10
B	9.4	0.04	0.57	0.42	3.56
C	8.0	0.12	0.82	0.66	3.40
D	12.3	0.22	0.58	0.60	3.67
E	9.1	0.10	0.88	0.68	3.63
F	8.2	0.24	0.50	0.57	4.16
G	9.6	0.16	0.52	0.50	3.44
H	9.0	0.15	0.66	0.58	3.52
I	10.7	0.27	0.70	0.73	3.83
J	11.2	0.27	0.50	0.60	3.80
K	11.5	0.11	0.67	0.55	3.66
SECTION C ASTM DATA					
1 (I)	9.1	0.13	0.82	0.67	3.5
2 (I)	12.5	0.15	0.12	0.23	2.5
3 (II)	6.0	0.03	0.96	0.66	2.5
4 (II)	4.3	0.20	0.30	0.40	2.0
5 (III)	13.8	0.18	0.88	0.76	4.0
6 (III)	9.5	0.14	0.11	0.21	3.0
7 (IV)	5.2	0.91	0.39	1.17	3.5
8 (IV)	3.8	0.12	0.30	0.32	2.0

*Percent Na_2O + .658 percent K_2O

TABLE II

Optimum SO_3 Content of 31 Cements as Computed from Equations No. 1 and No. 2 and as Shown by Tests

Clinker or Cement (1)	Equation No. 1 3 Factors c Coefficient 1.1841 (2)	c Coefficient 1.6841 (3)	SO_3 by Test (4)	Equation No. 2 4 Factors c Coefficient 1.2288 (5)	c Coefficient 1.7788 (6)	SO_3 by Test (7)	sq. cm. per g. Fineness Reported or Assumed
SECTION A LERCH DATA							
15367	3.00		3.0	3.00		3.0	1,900
16823	2.72		3.0	2.72		3.0	1,900
15900	3.56		3.5	3.54		3.5	1,900
15498	3.21		3.0	3.20		3.0	1,900
16843	3.98		4.0	4.08		4.0	1,900
15699	4.55		4.5	4.60		4.5	1,900
16827	3.49		3.5	3.34		3.5	1,900
16890	2.21		1.9	2.27		1.9	1,900
15623	1.92		1.9	1.93		1.9	1,900
15670	1.74		1.9	1.75		1.9	1,900
16839	3.54		4.0	3.63		4.0	1,900
16831	3.28		3.0	3.14		3.0	1,900
SECTION B McCOY DATA							
A	2.62	3.12	3.10	2.59	3.14	3.10	2,800
B	2.76	3.26	3.56	2.71	3.26	3.56	2,800
C	3.02	3.52	3.40	2.95	3.50	3.40	2,800
D	3.33	3.83	3.67	3.30	3.85	3.67	2,800
E	3.16	3.66	3.63	3.08	3.63	3.63	2,800
F	2.90	——	4.16	2.87	——	4.16	2,800
G	2.91	3.41	3.44	2.88	3.43	3.44	2,800
H	2.99	3.49	3.52	2.95	3.50	3.52	2,800
I	3.40	3.90	3.83	3.35	3.90	3.83	2,800
J	3.23	3.73	3.80	3.21	3.76	3.80	2,800
K	3.18	3.68	3.66	3.12	3.67	3.66	2,800
SECTION C ASTM DATA							
1 (I)	3.14		3.5	3.07		3.5	1,900
2 (I)	2.75		2.5	2.76		2.5	1,900
3 (II)	2.83		2.5	2.74		2.5	1,900
4 (II)	2.25		2.0	2.25		2.0	1,900
5 (III)	3.74		4.0	3.65	4.20	4.0	2,100
6 (III)	2.46		3.0	2.46	3.01	3.0	2,600
7 (IV)	3.59		3.5	3.62		3.5	1,900
8 (IV)	2.07		2.0	2.07		2.0	1,900

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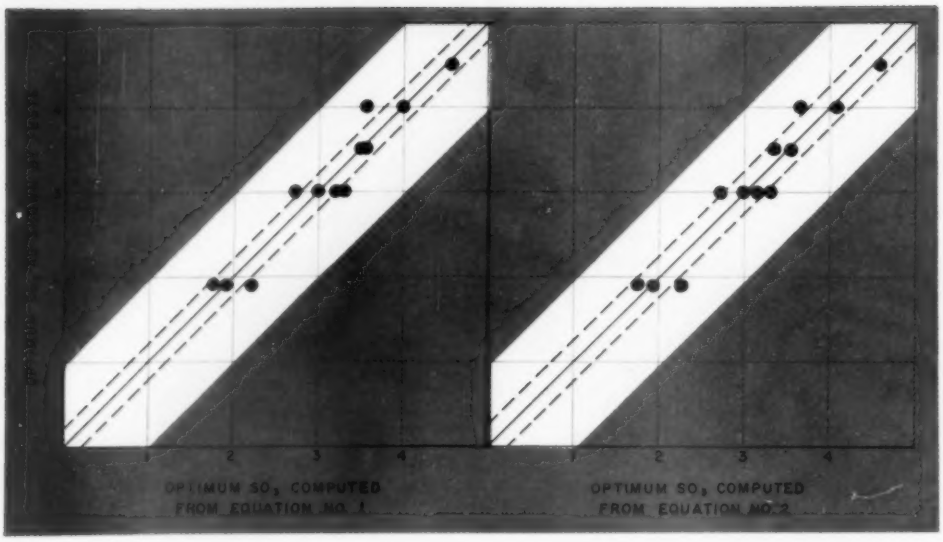

Figure 1. Computed values of SO_3 plotted against experimental values; dotted lines show standard error of estimate

SO_3 content

continued from page 110

in which X_1 — the optimum SO_3 content of the cement in percent, X_2 — the C_3A content of the clinker in percent, X_3 — the Na_2O content of the clinker in percent, and X_4 — the K_2O content of the clinker in percent.

The standard error of the estimate is .2456. The coefficient of determination is .9416, and the coefficient of correlation is .9703. In Figure 1 we show the computed values of SO_3 plotted against the experimental values; the dotted lines show the standard error of estimate.

Equations (1) and (2), derived from Lerch's data, are used for estimating the optimum SO_3 content of the other nineteen cements. These computed values are then compared with actual test values. We realize that the McCoy and ASTM data are for cements and not clinkers, and that the results are defective to this extent. The results are shown in Table II, Sections B and C, columns 2, 4, 5 and 7.

In all of McCoy's data, the computed SO_3 values are much less than the values determined by test. For Eq. (1) the average difference is minus .5000 (omitting Cement F, which is very much out of line). For Eq. (2) the average difference is minus .5500 (omitting Cement F).

These consistent differences can be attributed to the fineness of the cement. Although McCoy has not reported the acutal fineness of his Type III

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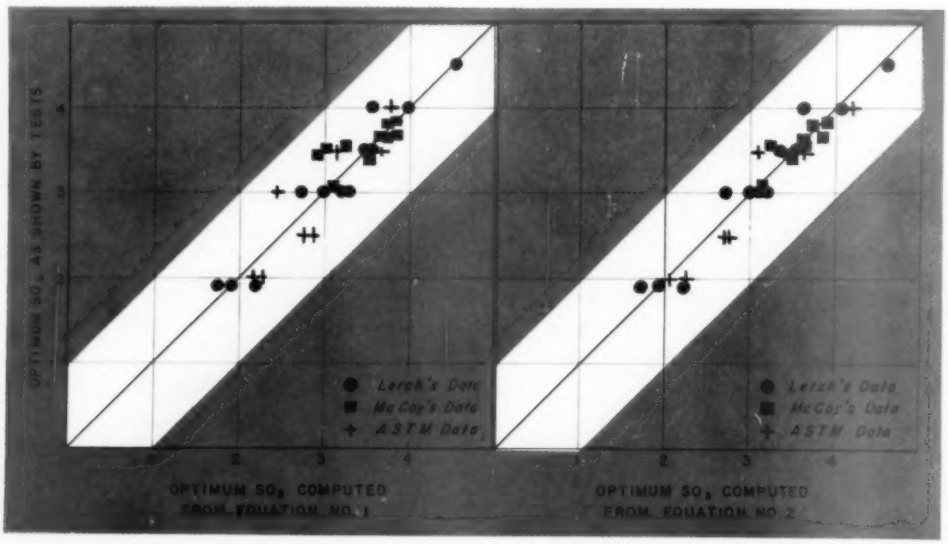
OPTIMUM SO₃ AS SHOWN BY TESTS
Lerch's Data
McCoy's Data
ASTM Data
OPTIMUM SO₃ COMPUTED FROM EQUATION NO. 1
OPTIMUM SO₃ COMPUTED FROM EQUATION NO. 2

Figure 2. Comparison of computed values and test values for all cements except Cement F

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Texaco Lube Plan can stretch maintenance intervals. With the Texaco Simplified Lubrication Plan, you can set up maximum lubrication intervals based on the experience that Texaco has had with hundreds of similar applications. The Texaco Lubrication Engineer will work with your mechanics, helping to specify the right lubricants for each piece of equipment. And because the Texaco Plan is based on a proven combination of just six multi-purpose and specialty lubricants, it can mean significant savings in inventory, less storage problems, and can drastically reduce the danger of misapplication.

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Your local Texaco Lubrication Engineer can give you complete information on the Simplified Lubrication Plan. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

WONDERWALL™ cuts by up to 90% for

Mr. Campbell (standing) and Mr. C. L. Pickhardt, National Gypsum transportation engineer, check on WONDERWALLS loaded in a freight car.

"WONDERWALL bags have helped us reduce breakage as much as 90%," states Mr. Robert Campbell, Manager of Packaging, Products Division, National Gypsum Company, Buffalo, N. Y.

"We estimate our present breakage rate with the WONDERWALL bag at less than one bag in a carload of 600 units. This is a reduction of 90% in our previous breakage rate in shipments going to certain difficult destinations.

"This improvement in package durability was accomplished without increasing the unit cost of the bags. There's no way to estimate the value to this company of the goodwill

The WONDERWALL places quickly on the packing spout because the Clupak extensible paper used to make this multiwall is so flexible. This flexibility also allows the bag to be handled easily.

The resiliency of the new kraft paper resists the weakening effects of plant handling, keeps the bags in better shape to withstand the shock of shipping.

bag breakage National Gypsum

gained by eliminating this sore spot in customer relations.

"West Virginia's WONDERWALL bag has won our wholehearted approval from both the performance and cost standpoints. Its success has prompted us to change bag specifications so as to use extensible type paper bags in all thirteen of our plants making plaster products."

WONDERWALL is the great new multiwall bag from West Virginia Pulp and Paper. WONDERWALLS outperform ordinary multiwall bags because they are made of Kraftsman Clupak* Paper—the new, extra tough kraft that stretches. WONDERWALLS pack faster, handle easier and stack better, too.

Try this superior, new multiwall. Order a trial shipment of 5000 WONDERWALLS on your next carload. Write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Ave., New York 17, N.Y.

See it at our exhibit,
AMA Packaging Exposition, Chicago

West Virginia Pulp and Paper

**Clupak, Inc.'s trademark for extensible paper manufactured under its authority.*

In some cases National Gypsum stores the bags before shipment, stacking them three to four pallets high. This places a 6000 pound pressure on the bottom bags, but the extra tough WONDERWALLS do not break.

WONDERWALL
Best bag of all

Enter 1485 on Reader Card

The genial Leo L. Davis flashes his famous smile as he finishes his report on NALI by-laws

John T. Sapienza saying: "It seems to pay to fight depletion cases in court"

Guests of the NALI at the annual Congressional Banquet included: (left to right) W. M. Palmer, Jr., Dolomite Products, Inc.; Senator Spessard L. Holland of Florida; the Honorable Phil M. Landrum of Georgia; Mrs. J. L. Pilcher and the Honorable J. L. Pilcher of Georgia, and E. R. Culbertson, Georgia Lime Rock Company

Policy statement sparks NALI meeting

A POLICY STATEMENT was the highlight of the recent annual meeting of National Agricultural Limestone Institute in Washington, D.C. Existing policies and objectives which have guided the institute's activities durng recent months were reduced to a short, concise document.

This public declaration is expected to clarify the NALI's stand on controversial issues in the farm program for the information of government administrators, farmers, truckers and limestone producers and their salesmen. The statement will affirm publicly the unified stand of members and will guide the day-to-day activities of the officers and staff.

There were four elements in the statement prepared by the special committee of the board of directors and offered to the membership meeting at the Statler Hilton January 20 and 21:

1. Institute support for the goals of the Agricultural Conservation Program, a project administered by farmer-elected county and community committeemen.

2. Institute opposition to groups and individuals who oppose the ACP on the basis of parochial, partisan interests.

3. Service to the farmer is paramount. The institute will cooperate with groups and individuals with the same objective, who promote the ACP and who work constructively toward solving conservation problems.

4. Institute favor for combining the organizations now serving the farmer in such a way that conservation effectiveness is improved and the savings used to benefit the conservation program.

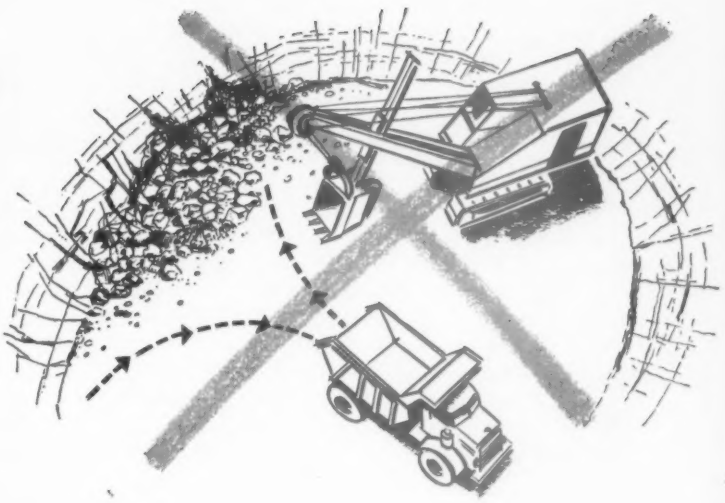
There appeared to be general agreement among the assembled producers that the long-term advantages of having a public statement of policy will outweigh any immediate disadvantages. While the institute will certainly be attacked for its stand on conservation activities, controversial problems will be brought out into the open where they can be analyzed and thoroughly debated. When all the facts are made available, administrators, farmers, producers and the press will be able to discuss how the whole conservation program may be made more effective.

Institute President Robert M. Koch reported that a firm statement of public policy would strengthen his administration of institute affairs by enabling him to point to a definite stand. He

Please turn to page 118

SHORT TURNS
...speed hauling in restricted areas

Even though most haulers make good time on straightaway haul and return, many of them make a poor showing on the entire work cycle. That's because of maneuvering difficulties in restricted load and dump areas. Conventional trucks, for instance — with full-length, 1-piece frame, hydraulic bowl hoist, and automotive-type steer — often slow down production and increase haul costs because of time-wasting maneuvering delays.



Maneuverability is no problem to the pivot-steer LeTourneau-Westinghouse Rear-Dump. Bowl on this off-road L-W hauler is connected to 2-wheel Tournapull® prime-mover by a geared kingpin. Big, instant-acting electric motor swings prime-mover 90° right or left for quick, easy spotting under shovel or at dump. Short-turning L-W hauler makes U-turns in less than its own length, in *only about 70% of length* with bowl raised. Result? Tournapull Rear-Dump saves time in the cut and dump... delivers more tonnage per day.

U-Turn Widths

Model	Tonnage	Length	Bowl Down	Bowl Raised
B	35	36'7"	35'0"	27'0"
C	22	29'6"	28'8"	20'8"
D	11	24'10"	24'8"	18'8"

R-1898-G-1

Ask for full specifications on L-W Rear-Dumps

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

"Our industry . . . will have to be in there to make certain that the ordinary treatment processes are allowed . . . " —J. T. Sapienza

NALI meeting *continued from page 116*

already sees some tangible results of these policies—there has been some consideration of the idea that all conservation projects be administered in a unified program, and an impartial study group is now being selected by the Department of Agriculture to analyze the existing situation and to make recommendations for improvement.

Mr. Koch stated that the institute is a growing and expanding organization. While there have been several withdrawals because of stepped-up activity and wide-spread publicity, the addition of a larger number of new members will add strength to the institute. Of the present 528 members, 441 are producers. The NALI is looking forward to continued growth among both producers and manufacturers during the next year, with a potential addition of 100 to 150 new members.

At the luncheon meeting on January 20, Mr. Koch developed the background for the afternoon's program by asking the question, "Where is the conservation program going?" In the past the institute has been preoccupied with merely keeping the ACP intact; now it can look forward to a growing and expanding program. While no one knows how much money will be appropriated for this activity during the next few years, Mr. Koch predicted an annual expenditure of $500 million for the ACP in the not too distant future.

The reports of the committee chairmen confirmed that the NALI is a thriving, expanding association. Arthur R. Alvis, chairman of the membership committee, outlined its progress during the past year in adding a number of strong, active members from all parts of the country. The committee works closely with the staff to develop both producer and manufacturer memberships.

The staff not only visited a large number of producers during the year past, but also attended a large number of state and regional association meetings, according to the report of the state association committee. George A. Zeigler, chairman of the promotion and education committee, stated that there will be no let-up in the institute's continuing program of advertising and promotion.

The nominating committee offered the names of W. L. Bryan, Bryan Rock Products, Inc., Shakopee, Minn., to succeed William E. Stone as chairman of the board, and Arthur R. Alvis of Alvis Limestone & Concrete Products, Inc., Butler, Mo., to succeed Mr. Bryan as vice chairman of the board. These officers were elected. Continued in office were President Robert M. Koch, Vice President Samuel Omasta, and Secretary-Treasurer J. B. Mount, Maymead Lime Co., Shouns, Tenn.

Two contrasting but equally vital problems for producers were discussed by the Tuesday morning speakers—depletion allowances and salesmanship. John T. Sapienza, NALI legal counsel, discussed the status of revenue rulings on depletion cases and the implications of the changes incorporated into the 1954 revenue law. While depletion is important to a producer, no firm can exist for long without sales. The program committee selected C. Carney Smith of Mutual Benefit Life Insurance Co. to instruct members in the art of selling.

The problems of depletion have been with rock products producers for quite a while and appear to be no closer to a definite, realistic solution. Mr. Sapienza held out little hope of tax improvement and relief for producers enmeshed in a maze of bureaucratic regulation. First, it appears that the entire nonmetallic mining industry may have to operate under new statutory rules on what are allowable treatment processes.

Secondly, it seems that it pays for taxpayers to take their cases to court. When there has been a disagreement with tax agents on the basis for computing depletion allowances, with few exceptions the courts have ruled for the taxpayer.

Although the 1954 Code requires the taxpayer to compute depletion based on the end-use of their product, the courts have held the end-use test invalid under the 1939 Code. Thus, agricultural limestone processors whose material has at least 95 percent total carbonates have a good chance of getting a 15 percent depletion allowance for years under the 1939 Code. Mr. Sapienza suggested that where taxable years are still open, it might be profitable for a producer to file claims for refund of income tax when it had been computed on a lower base than is now allowable.

"Elucidate the obvious, not explain the obscure . . ." was Mr. Smith's thesis for good selling practice. However, the enlightenment cannot take place unless there is good communication, both within a selling organization and between it and the public it is "selling." This means that the producer who would continue to be successful cannot, like the ostrich, ignore selling problems: he must buckle down and learn another skill, the art of communication. END

Cut mining costs thru better clean-up

There are only two ways to increase your mining profits without a rise in the price of ore. You must increase your production, or lower your operating costs . . . or both.

Here are 9 big ways a versatile modern high-speed grader can increase mining production and cut operating costs, to boost your profits.

1. Regular, more frequent maintenance of haul roads — Smooth roads speed hauling, save tire-wear, cut maintenance, improve safety.

2. Quick clean-up after blast — Grader provides a fast, inexpensive way to move scattered fragments back against toe, thus protecting tires, machinery, and men working around the pit . . . speeding up all pit operations.

3. Clean pit floors — Regular routine in maintenance of wide traffic ways makes all areas of the pit quickly accessible. Equipment can travel to any assignment by the shortest route. Smooth access pays off, saves wear on tires and crawlers, improves drainage, prevents dirt and refuse from weathering into levels of ore below pit floor.

4. Maintain good housekeeping around plant — You need ample grader capacity to keep roads, runways, working areas around plant neat, clean and workable at all times. Level or remove the occasional spill left by heaped trucks . . . from around hoppers, grizzlies, conveyors, and trestles. A clean plant area speeds all mobile equipment operation around plant, reduces dust, and improves safety.

5. Keep stockpile toes pushed in — Weather and loading operations result in spread of toes around stockpile. This limits working space, wastes stored material. Also, working thinly-spread toes means inferior ore grades, increased loading cost. Regular grader service helps prevent this waste.

6. Keep dumps smoothly spread and level — A level, dry dump speeds hauling, cuts equipment costs. Graders can spread dumped material clear over edge. Offset blade reaches far beyond leaning front wheels, which hold against side thrust. Grader can smooth haul road on the way to and from dump.

7. Clean ore benches of washed-down dirt — Every rain washes dirt into upper benches, lowers ore grade. Prompt grader service halts "wash", provides planned drainage, piles washed-in material for easy removal by scraper or truck.

8. Assist exploration teams — A modern grader can build a well-graded roadway in a matter of hours, can speed exploration work by maintaining good haul roads.

9. Keep drainage open — In a few hours per week, a modern grader will keep ditches clean, pit dry.

Inventory capacity of your present graders

It will pay you to inventory the work capacity of your present graders. If they are more than a few years old, you will probably find a substantial saving in replacement with the faster, more powerful, big-capacity graders currently on the market. We will be glad to assist by furnishing specifications and comparative statistics on our L-W line of modern Adams* graders, manufactured by the LeTourneau-Westinghouse Company.

Reprints available on request.

Moving fast, this L-W model 660 Adams grader keeps pit floor clean, saving wear on fleets' tires and treads. Permits driving equipment by shortest routes, improves drainage.

This high-speed modern grader keeps haul roads in good condition to speed movement of haulers, reduce wear on tires and machines.

Occasional spill over sides of heaped trucks . . . around hoppers, grizzlies, conveyors, and trestles . . . can litter concentrating plant area, slow traffic, damage tires. Regular grader service speeds operations, saves on maintenance and repairs. *Trademark G-1812-M-1

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Indiana company converts slag to lightweight aggregate

Mobile loader allows round-the-clock

THE STEEL INDUSTRY'S biggest waste product—blast-furnace slag—is being transformed into a useful item—lightweight aggregate—by Gary Slag Corp. in Gary, Ind., now a part of Consumers Co., division of Vulcan Materials Co., with a big assist from a high-capacity, 3½-cu. yd. tractor-shovel.

Gary Slag must match its production to that of its slag supplier, U. S. Steel. Work goes on 24 hr. a day, 6 sometimes 7 days a week, with eight 250-watt mercury arc-lamps lighting up the yard for night-time operations. Molten slag arrives in a string of railroad ladle cars from the steel works just three miles away. The shuttle service makes several trips per 8-hr. shift, with from four to sixteen 400-cu. ft. ladles per trip.

Beside this rail siding, Gary Slag has a long, deep pit. Along the trench wall, about a foot below the tracks, the company buried 16 high-pressure water nozzles spaced 22½ ft. apart. The 22½-ft. distance was determined by the ladle cars —that's the exact distance from the pouring lip on one ladle to the pouring lip of the next.

Once the cars are in position, workmen turn on the nozzles and carefully tip one or two ladles at a time. The thin stream of molten slag, bubbling at a 2,600 deg. F. heat, hits the water spray with a loud hiss. The slag expands as it solidifies, and showers into the bottom of the trench.

A giant crawler-crane dips its 4-cu. yd. dragline bucket into the trench and scrapes up a hissing, crackling load of hot aggregate. The material—still glowing at about 700 deg. F.—is deposited in a stockpile.

Lightweight aggregate stockpiles build up fast: trainloads of material arrive in four to sixteen 400-cu. ft. ladles per trip, several trips per shift, three shifts per day. But the 3½-cu. yd. tractor-shovel bucket keeps pace with the round-the-clock train schedule. In one scoop, the loader lifts four tons of aggregate. A 10-ton haul truck is heaped to overflowing in 3 passes in only 75 sec. Gary Slag's big 20-ton dump truck is loaded out in less than 3 min. in 5 passes.

The tractor-shovel was purchased with a high-lift bucket attachment. This attachment adds about 3 ft. to the clear dumping height. With a clear dump of over 11 ft., the machine easily feeds the high-sideboard 20-ton dump truck.

Gary Slag added a dozen teeth onto the bucket to improve digging into the hot aggregate. A job-built backboard increased the bucket capacity and helps keep the hot material off the tractor-shovel and cab.

The maintenance shop cut the backboard out of ¾-in. steeel plate, made it 9 ft. long and 18 in. high with a center section 2 ft. high. This modification was no threat to overloading the machine, for the expanded slag weighs only 1,400 lb. per cubic yard.

The haul trucks shuttle between stockpile and crusher—about an 800-yd. round trip. The 125-tph. crusher turns out two sizes (coarse and fine) of specification high-quality lightweight aggre-

Left: Ladle cars are tilted above high-pressure nozzles to "expand" the slag as it cools

Still red hot, raw expanded slag is reclaimed from the cooling pit

operation

gate. The company plans to double the capacity of the crushing plant.

Right now, the new tractor-shovel is loading out about 2,400 tons per day. It uses its "free" time to pitch in on other chores around the plant site. It loads out the finished product, spots rail cars, cleans up around the crusher and tows stalled equipment.

The lightweight aggregate, called Garylite, is used in the manufacture of quality lightweight masonry block, brick, precast shapes and channels in the Chicago area and throughout the Midwest. Thousands of cu. yd. of Garylite lightweight concrete went into the floors, columns and beams of the 42-story Prudential Building and the new, modern Sun-Times Building in Chicago.

Any machine that works three 8-hr. shifts a day, 6 days a week, is "aging" 3 times as fast as normal. To keep equipment moving, P. J. Mack, Gary Slag's superintendent, follows a simple rule: The operator is responsible for his machine. That means the operator handles his own servicing.

This certainly pays off. For example, on the tractor-shovel not only does the operator pull the normal 8-hr., 40-hr., 100-hr. checks—but during "lulls" in the 24-hr. workday, he can tighten a bolt, check tire pressure or scrape away dirt and grime. Slag dust is especially rough on the engine; the air cleaner filter must be changed every day. Every week the machine gets a thorough going over.

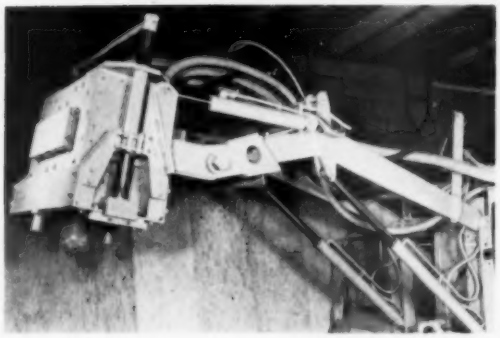
END

Stockpiled material is loaded into trucks for the trip to the processing plant

Trucks haul about 2,400 tons a day for crushing and screening

The tractor-shovel is a Model 175A Michigan equipped with a high-lift bucket attachment and a 3½-cu. yd. bucket.

Right: DAMCO rotary drill in action



Hydraulic rock breaker developed by International Research & Development Corporation, Columbus, Ohio

Thomas E. Lalley (fourth from left), Bradford Hills Quarry, Inc., succeeds Paul W. Seitz (second from left), May Sand & Gravel Corp., as President of the National Crushed Limestone Institute. Other officers include Secretary-Treasurer Taisto Laine (left), Limestone Aggregates, Inc.; First Vice President E. B. Snead (center), Texas Crushed Stone Co., Inc., and Executive Vice President Robert M. Koch, (right), NCLI, Washington, D.C.

New rock breaker and rotary drill highlight NCLI annual meeting

SENSATION OF THE ANNUAL CONVENTION of the National Crushed Limestone Institute in Washington was the introduction of a recently developed rock breaker. The new machine has demonstrated great promise as a secondary breaker in the quarry of Marble Cliff Quarry Co. where it has reduced blocks of limestone to rubble in seconds.

The hydraulically operated breaker, of radical design, is the invention of Theodore Onargo, Italian-born engineering prodigy and an official of International Research and Development Corp., Columbus, Ohio. He appeared before the producers assembled at the Statler Hilton Hotel to describe the design and operation of his machine.

Only about 4 x 4 x 2½ ft., the device is readily mounted on the business end of almost any standard front-end loader. As its 5-in.-diam. tool-steel point rests on the top of a block of stone it delivers 90-ton impacts at the rate of 20 per second. These massive blows set up destructive stresses within the block which quickly shatter it.

While the unit is not yet available for commercial production, a model has been in operation in the Columbus quarry for nearly a year. Here, where two ledges of limestone with different physical characteristics are available, the machine has been carefully field-tested. In spite of the fact that it is only a "pilot model," observers report that results have been amazing.

Several producers alerted the meeting to the availability of a rotary drill which has given outstanding performance in their quarries. The unit, made by DAMCO in Dallas, increased drilling speed for one producer from about 45 ft. an hour to about 5 ft. a minute in the upper ledge of his quarry. Another reported a drilling speed of about 3 fpm. in hard, solid rock.

Please turn to page 150

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As shale is dumped on the grade, the 4-in-1 instantly changes from big-capacity loader to material-moving bulldozer. The operator simply lifts the clam lip, hydraulically, to switch machine actions. He regulates dozing depth with positive accuracy, using "radius control" of blade. It takes a bonafide, full-size standard dozer to match this capacity!

"Back-Dragging" with exclusive clamshell action, the 4-in-1 reduces time and cost of "dressing" a bank and pulling down "slide" rock. TD-20 shuttle-bar control speeds up back-and-forth cycles on jobs like this. Using clamshell in this position also permits speedy pick-up of stumps or loose materials that give straight buckets trouble.

"Our TD-20 Four-in-One does jobs impossible for regular dozer or loader"

—J. F. Coal Corporation, Summersville, W. Va.

"We have used the 4-in-1 for practically all phases of this work, often doing jobs impossible with regular dozer or loader," reports Russell Patrick, Manager, J. F. Coal Corporation, Summerville, W. Va. Prove to yourself what it means to get four-machine utility—bulldozer, excavator-loader, clamshell, "carry-type scraper"—for one moderate investment. See how this "one-man equipment fleet" cuts operating cost and machinery investment—increases profit. Measure the performance-protection plus value of exclusive, shock-swallowing Hydro-Spring. See your International Drott Distributor for a 4-in-1 demonstration!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

Applying its tremendous 43,150 lbs. of pry-over-shoe breakout force, this TD-20 4-in-1 shows how its power speeds heaping the 3 cu. yd. bucket full of shot-rock! The unit is helping build two miles of coal mine rail spur grade, from clearing to completion, in mountain terrain. Owner: J. F. Coal Corporation.

INTERNATIONAL®
DROTT

In the "quarry," Turner's 3-cu. yd. shovel can put 300 tph. of broken rock into haulage trucks for the plant's dump hopper

H. Turner & Son's portable operation includes a dual-tandem crusher designed by the firm's president

Limestone spoil bank marks portable plant site

HE WHO JUMPS QUICKEST when opportunity knocks usually ends up a winner. H. Turner & Son of Boscobel, Wis., jumped profitably into a high, long spoil bank along Chicago's newly widened Calumet Sag Channel with a portable crushing plant that includes a dual-tandem crusher designed by the firm's president. In two years the Wisconsin road builder has sold about 400,000 tons of rock—and kept equipment working that otherwise might have been idle.

Two big crushing-screening plants and assorted other equipment—the third of Turner's three portable operations—were brought to Illinois to do the job. Good-quality limestone is processed at the rate of 300 tph. Sold as either uncrushed fill or processed stone of specification quality, the rock is proving of value not only to Turner, but also to Mary Construction Co. of Cape Girardeau, Mo., which subcontracted the stone removal job to the Wisconsin firm.

Mary Construction Co. was required to cut maximum height of the spoil banks along the canal down to 10-40 ft., depending on location, to prevent unstable soil beneath from giving way. In subcontracting to H. Turner & Son, the construction company eliminates a headache and gains a source of revenue at the same time.

The Missouri firm holds the contract to widen a section of the channel from 60 to 225 ft. This project is part of Chicago's preparation for the opening of the St. Lawrence Seaway, which will bring ocean-going vessels to the city's harbors.

The channel includes a 2,500-ft. stretch through Niagara limestone. In November, 1955, the construction company began blasting to remove this obstacle. By fall of 1957, 1.8 million cu. yd. of the stone had been blasted loose and piled in a spoil bank on the channel's south side.

Two large draglines and five percussion drill rigs—two with 4½-in. bits and three with 3½-in. bits—do the job. Mounted on either portable crawler chassis or Mary Construction Co.'s barge (for underwater drilling), the five rigs push down holes while the blasting crew follows. To loosen

Please turn to page 126

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New 6-cyl. UC-263 develops 95 max. hp @ 2400 rpm.

New 6-cyl. UC-221: 75 max. hp @ 2400 rpm.

Three NEW heavy-duty International engines with long-life features

Newest heavy duty carbureted engines in the International line are two compact 6-cylinder models, the UC-263 and UC-221, rated at 95 and 75 max. hp @ 2400 rpm, and the rugged 4-cylinder 42 hp UC-135.

While these three new engines vary in power ratings and numbers of cylinders, they have much in common: fuel saving combustion on gasoline, LPG, or natural gas; efficient valve-in-head design; long-life pressure lubrication; replaceable sleeves; thorough sealing against life-shortening dust; updraft carburetion; and factory-engineered power unit components and attachments for individual requirements.

Many of the rugged features associated with diesels are found in both the new UC-263 and UC-221. These engines vary only in head and piston sections from their two interchangeable diesel counter-parts—the 95 hp UD-282 and the 75 hp UD-236.

Other features of 6-cylinder models: 7.2:1 compression ratio and 18 mm plugs for best fuel economy; fully machined combustion chambers for uniform power output; exhaust valve rotators; 12-volt starting and ignition system; low friction stepped-dome pistons; and deep I-block crankcase.

See how these engines can save you money powering new pit and quarry machines or repowering old equipment. Your International Power Unit Distributor or Dealer will give you full details. He sells and services 24 carbureted and diesel engines from 17 to 385 max. hp. See him soon.

New 4-cyl. UC-135: 42 max. hp @ 2000 rpm.

International® *Construction Equipment*

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Spoil bank

continued from page 124

the 1.8 million cu. yd. of rock, 1 lb. of explosive was employed per cubic yard.

The draglines are equipped with 7- and 10-cu. yd. buckets. Rock is removed in two neat stages: After overburden is scraped away, rock above river level is drilled and blasted. Next the barge and its three percussion drills go to work on the underwater rock.

Here's where the Turner firm comes in: While the two draglines were still working, Turner's portable plant was set up near Chicago's suburban Lemont and right in the middle of the stone pile.

In the "quarry," four 15-ton haulage trucks are loaded by a 3-cu. yd. shovel. After a quick run averaging a quarter-mile along the canal, the rear-dumps deposit the stone in the plant's dump hopper. The 300-tph. rock flow to the portable plant is evened out by a vibrating feeder beneath the hopper moving the stone to a 30 x 42-in. primary jaw crusher.

Next step in the straightforward plant process flow is the first of the two portable crushing-screening units. Its screen and two crushers — a double-roll unit and a second jaw crusher—permit the plant's superintendent, Fred Boak, to accomplish several things.

Rock coming to the portable first meets a vibrating screen, a two-deck unit which passes minus ¾-in. stone to the first of four truck load-out bins. This material meets Illinois State highway requirements for Grade 8 crushed stone, a product which must have 60 to 90 percent passing a ½-in. mesh screen and 5 to 15 percent passing 200 mesh.

Stone off the screen's two decks—mounting 3-in. and ¾-in. cloth—is sent through the second jaw crusher and the roll unit. One of the plant's many portable conveyors now feeds the crushed material to the second portable crushing-screening plant.

Atop the No. 2 portable unit sits a big 5 x 12-ft. twin-deck screen. The finest of its three fractions is minus ⅞-in. through material; this is sent to

Please turn to page 128

Here is the second portable crushing-screening plant. Dual-tandem roll crusher is driven by two diesel engines. In the rear, final sizing is done atop load-out bins

"At AMERICAN AGGREGATES CORPORATION

we use Jeffrey Jigs to meet state specs"

Two Jeffrey jigs, each processing more than 150 tons of aggregate per hour, are located in this building at American Aggregates' new "push-button" plant at Columbus, Ohio. A third unit was recently purchased in lieu of a heavy-media separation system at one of their other plants.

Mr. Elmer Warner, plant superintendent explains: "Meeting rigid state specifications for concrete aggregate is no longer a problem with us here at the Columbus, Ohio plant. In previous operations we were hard-pressed in meeting 'specs'.

"A year ago we bought our first Jeffrey jig to help us meet state requirements allowing only a maximum of 5% deleterious material. This jig, the first to be used in this area for separation process, held deleterious material to well below the maximum allowed.

"You can see why we recently installed our second Jeffrey jig here . . . and why we bought another for our plant at Kalamazoo, Michigan."

Jeffrey jigs produce premium quality concrete aggregates for only a few pennies per ton of material processed. That's the kind of profitable performance that pays off in this industry.

Jeffrey engineers are qualified to advise you on sand-and-gravel separation or processes involving jigging of coals or ores. Get in touch with The Jeffrey Manufacturing Company, 935 North Fourth Street, Columbus 16, Ohio.

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT...TRANSMISSION MACHINERY...CONTRACT MANUFACTURING

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Both portable plants show here: primary at left, second unit at right; truck dump hopper and primary crusher off to left

Truck load-out bins line up beside the plant; portable units at right rear

Spoil bank

continued from page 126

another screen for final classification. Middle fraction is 2 x ⅞ in. Dropping off the end of the screen, it passes to either the dual-tandem roll crusher of Turner's own design or can be sent to the plant's second load-out bin.

The dual-tandem crusher, designed by the firm's president, Herbert Turner, is built under license by the manufacturer of the first portable plant. It consists of two parallel shafts with two rolls on each. In effect it is two twin-shaft roll crushers, though it requires only two shafts instead of four. The result is a saving in space, an important item in portable plants. And, because only one set of shafts, gears and accessories is used, the unit weighs less than two separate roll crushers of equal capacity. All four rolls are 40-in. diam., but one set has thicker shells and smaller clearances making a finer product.

At Superintendent Boak's option, the plus 2-in. material scalped off the top deck of the second screen may be sent through the other pair of rollers in the dual-tandem roll unit. Alternately, the oversize goes directly to the second truck load-out bin for storage.

The plant's final classifying screen is set on top of a final pair of truck bins. Here crusher product is separated by a two-deck screen into three size classes: ⅞ x ½-in. "gravel," ½ x 3/16-in. chips and minus 3/16-in. screenings. A lateral belt from the screenings compartment is set to send this product to the Grade 8 bin, should that product need more fines to meet specifications.

Turner uses both a large rubber-tired tractor-shovel and a smaller crawler unit for loading delivery trucks with rock from ground storage and with unprocessed rock to be used as fill. The two loaders also come in handy for cleaning the quarry roads.

Power for the four crushers and three screens is supplied by diesel engines, while the plant's conveyor motors use electric power from utility company lines.

Breaking into a new market like the fiercely competitive area around Chicago is a tough job, especially for a firm like Turner. It does not market a complete line of building materials as do many competitors. In quest for markets, Turner's sales staff looks many places for leads: F. W. Dodge reports on new building contracts, legal notices of building permits issued and others. Turner salesmen stick to the area southwest of Chicago to minimize haul distances and, thus, give the best possible delivered price. The Niagara limestone actually is not hard to sell, for with a specific gravity of 2.79, it makes concrete with 5,000 to 6,000-psi. strength, fully adequate for nearly all uses.

END

EQUIPMENT REFERENCE

Used by Mary Construction Co.:

Percussion drill rigs, 4½ in., Challenger (2) ..... Joy Mfg. Co.
Percussion drill rigs, 3½ in., Model 123 (3) ..... Gardner-Denver Co.
Walking dragline, 10 cu. yd. Model 723 ..... Page Engineering Co.
Crawler dragline, 7 cu. yd., Model 2400 .. Construction Equipment Div., Baldwin-Lima-Hamilton Corp.

Used by H. Turner & Son:

Quarry trucks, 15-ton rear-dump (4) ..... Euclid Div., GMC
Power shovel, 3-cu. yd., Model 1201 ..... Construction Equipment Div., Baldwin-Lima-Hamilton Corp.
Vibrating feeder, 5 x 12-ft. ..... Simplicity Engineering Co.
Jaw crusher, 3042 ..... Universal Engineering Corp.
Portable plant No. 1
—Vibrating screen, 2-deck, 4 x 8-ft. ..... Simplicity Engineering Co.
—Jaw crusher, 10 x 36-in. ..... } Universal Engineering Corp.
—Roll crusher, 30-in. ..... }
Portable plant No. 2
—Vibrating screen, 3-deck, 5 x 12-ft. .... Simplicity Engineering Co.
—Dual-tandem roll crusher, 40-in. ..... Universal Engineering Corp.
Vibrating screen, 2-deck, 4 x 12-ft. ..... Iowa Mfg. Co.
Diesel power units ..... Caterpillar Tractor Co.
Portable belt conveyors ..... Barber-Greene Co.
Tractor-shovel, Model TD9, crawler ..... International Harvester Co.
Tractor-shovel, Model 175A, rubber-tired ..... Clark Equipment Co.

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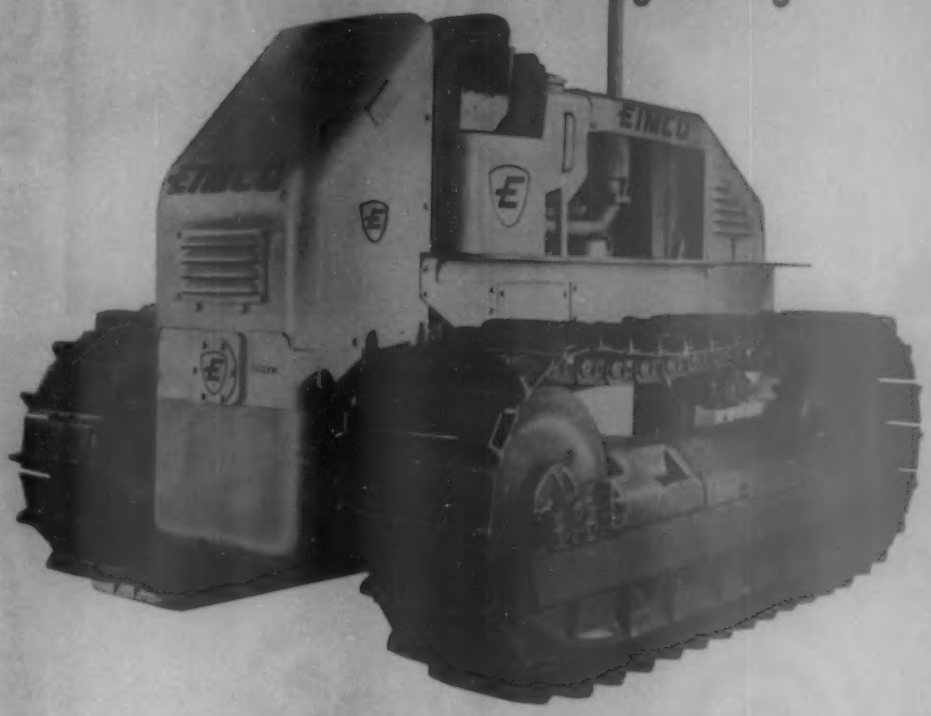

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- Independent Track Drive for spin turns in own length
- Center - mounted power unit for better traction and balance
- Track Oscillation for easy operating mobility on all surfaces
- One piece cast alloy-steel track rollers, liquid flame hardened
- Instant reversal with one control lever for each track
- Many others we'll be glad to demonstrate and explain
- Available in Model 105 — Tractor, Excavator, Dozer or combination
  Model 115 — Special Steel Mill Excavator
  Model 125 — Front End Loader and Fork Lift
  Model 135 — Steel Mill Front End Loader

Contact the nearest sales office of The Eimco Corporation, P. O. Box 300, Salt Lake City, Utah

THE EIMCO CORPORATION • SALT LAKE CITY, UTAH

EXPORT OFFICE, 51 - 52 SOUTH STREET, NEW YORK, N. Y.

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NCSA's new look in programming featured a series of "round table" discussions for operating men and equipment manufacturers

NCSA scores bull's-eye with "new look" program

SOMETHING NEW in convention programs was tried at the 42nd Annual Convention of the National Crushed Stone Association. And it worked to perfection. The meet was held January 27-30 at the Americana Hotel, Miami Beach, Florida. It was dubbed the biggest and best off-show-year convention in the history of the Association. Registration topped 1,000.

The "new look" of the 1959 meeting brought with it many innovations designed to give the maximum information to all groups of conventioners. The meeting this year was extended to four days for the first time. Sessions were so arranged as to give ample time for serious business, yet allowed some time for relaxation in the balmy southern climate. Revised programming included these unique features: (1) series of "round table" discussions for operating men and equipment manufacturers, (2) session for salesmen, (3) technical sessions, and (4) a special session for executives and one for cost accountants.

Warren C. Rowe of Malden, Mass., was chosen to head NCSA for 1959, succeeding O. E. Benson of Easton, Pa. The new vice president is George D. Lott, Jr., Columbia, S.C. Progress reports showed that the Association had made great strides in 1958 under the leadership of Mr. Benson and his staff. Mr. Rowe, along with his committee on convention arrangements, received credit and praise for giving the "new look" to the convention program.

Services of the Association continue to expand. Executive Director J. R. Boyd reported the increased activities in publications and mailings to membership. These include 45 releases on legal opinions, a new classified directory of the Manufacturers Division, the Crushed Stone Journal, plus many letters on various problems of industry interest. New projects have been begun and old ones have been enlarged. Specifically, the Association's Cost Accounting Manual is a newly completed piece that took many hours of hard work by Arthur Goff and his committee. It is considered one of the best projects ever tackled and completed by NCSA.

Similarly, engineering services of NCSA continue to multiply. J. E. Gray, Engineering Director, described this work and its importance to the industry and to Association members.

The office of the Engineering Director serves individual members by conducting service tests

Please turn to page 134

Enter 1420 on Reader Card

NEW CONVEYOR DESIGN

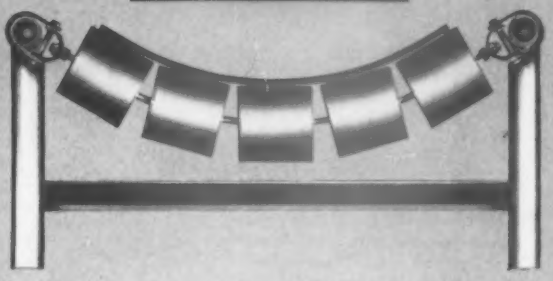
(EXCLUSIVE WITH McNALLY PITTSBURG)

...means far longer belt life!
...slashes maintenance costs!

SECRET

. . . of the improved efficiency of this new belt conveyor. This new McNally Pittsburg Cradle Idler* consists of 5" rubber rollers assembled on precision ball bearings, prelubricated, lifetime sealed. Being a *true catenary* suspension with rollers mounted on flexible, *non-rotating*, stainless steel wire rope, this design eliminates "loping" and harmonics.

RESULT



. . . is greater capacity and faster belt operation with minimum spillage. Since the belt lies in true arc with no creases or bends to cause wear, *belt life is substantially increased*. Because this unique McNally Pittsburg conveyor design is so simple, maintenance costs are lower; over-all erection time is reduced to a minimum as well.

For do-it-yourself construction, the entire conveyor is shipped disassembled and may be put together in the field to fit your conveyor needs. Also, a new "SHORTY" conveyor is available, only 2 feet high, ideally suited for use in limited working areas, above or below ground.

Write today for full details and information on this new, remarkably efficient, McNally Pittsburg Conveyor. Its new design cuts installation costs—and saves you money on belts and maintenance.

*Patents Pending

McNALLY PITTSBURG

McNally Pittsburg Manufacturing Corporation—Manufacturing Plants: Pittsburg, Kansas • Wellston, Ohio Engineering and Sales Offices: Pittsburgh • Chicago Rio de Janeiro • Pittsburg, Kansas • Wellston, Ohio

Write Today

McNally Pittsburg Mfg. Corp.
Dept. R.P.
Pittsburg, Kansas

☐ Please send information on the new McNally Pittsburg Belt Conveyor.

☐ Have Sales Engineer call for further consultation.

NAME _____ TITLE _____

COMPANY _____

CITY _____ STATE _____

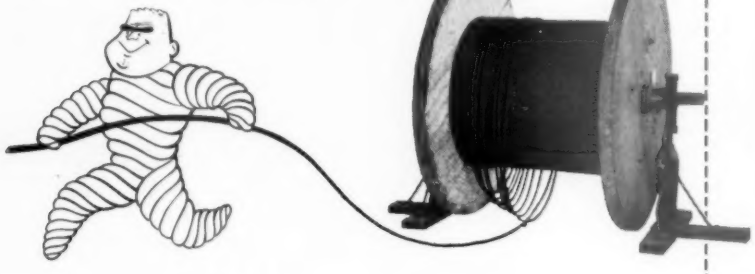
Tuffy® Wire Rope Tips

More Damage is Done by Broken Rules Than by Broken Strands—

Rule 1: RIGHT WAY to Set Up Reel for Unwinding

The stock reel should be set up on jacks, so the rope will come from the under side of the reel.

In the picture below, unwinding has started and the reel is turning faster than the rope is being pulled off. But no damage is done. Why? Because in coming from the under side of the reel, the rope is simply loosening, without forming loops or kinks.



Tuffy Balanced Dozer Rope

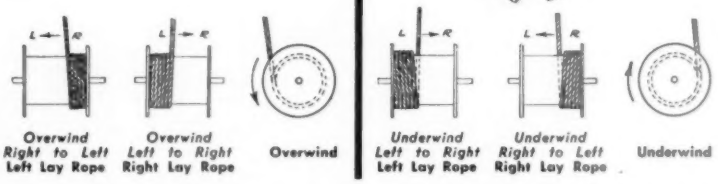
Built to give you longer service with less downtime. Mounted on your dozer, a 150' reel of ½" or 9/16" can give you a big bonus of extra service. Here's how: when rope shows drum wear or is crushed on the drum, you feed through just enough to replace the damaged part. You save the 40 to 50 feet ordinarily thrown away. Also available in 300' and 500' reels.

Rule 4: What's The Correct Lay for Each Type of Winding?

"Lay" refers to the direction of the strands in wire rope. It's a **right** lay rope when the strands pass from left to right across the rope. It's **left** lay when they pass from right to left.

The direction of winding on the drum is determined by standing behind it, looking toward the direction of rope travel.

When winding one layer only on a smooth drum, the right and left lay ropes indicated in the drawings below will give the best service.



Tuffy Balanced Scraper Rope

"Balanced" construction makes it flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Also gives higher resistance to the shock of load impact on slack line. Moves more yardage per foot because it's specially built to take the beating of drum-crushing abuse.

Tuffy Balanced Dragline Rope

Here's highest abrasive resistance with super flexibility. Better spooling. Smoother riding on grooves. And Tuffy Dragline Rope hugs the drum when casting for full load. Gives you longer service life, consistent dependability, in handling any material — wet or dry dirt, sand, gravel, rock, cement or minerals.

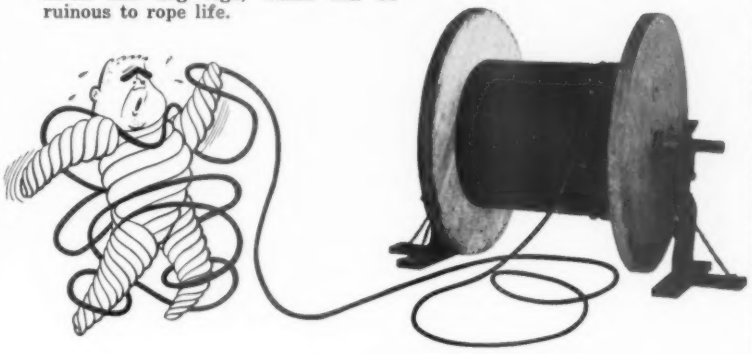
Tuffy Balanced Slings & Hoist Lines

"Balanced" because they combine strength, flexibility and toughness in the proper relationship to do a better job longer.

Tuffy Slings and Hoist Lines are a top-performing team in every type of materials handling. The slings are made of a patented, machine-braided fabric that's next to impossible to knot or kink. The hoist lines are a special construction in which strength, flexibility and toughness are balanced.

Rule 2: WRONG WAY to Set Up Reel for Unwinding

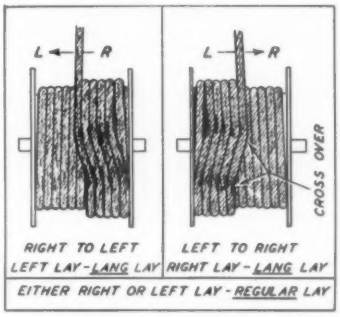
The rope is coming from the top of the reel and forming loops as it overruns. These loops are likely to form kinks and dog legs, which can be ruinous to rope life.



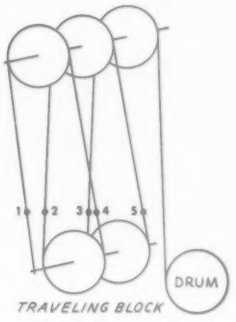
Rope for multiple layer winding: When a rope winds in the first layer across the face of a drum, it usually forms a uniform helix. On reaching the flange of the drum, the rope rides upon the last turn and starts winding back across the face of the drum, but falls into the depression of the successive turns of rope on the first layer.

Advancing across the drum on the second layer, the rope, following the depressions of the first layer, actually winds **back** a turn in each revolution of the drum. It must then cross over **two** depressions of the first layer to have a net advance of one turn per revolution.

This cross over is unavoidable on the second and succeeding layers. Severe punishment of the rope results, due to abrasion of the adjacent turns against each other, and the crushing from the next layer above at these points. Parallel-grooved controlled cross-over drums minimize this condition.



Rule 3: How to Figure Reeving Loads



Reeving ropes through the sheaves multiplies the number of parts supporting the load. The lead line to the drum carries the weight of the load lifted, divided by the number of parts, plus the accumulation of friction on all sheaves.

To count the number of parts supporting the load, draw an imaginary line across the parts of the rope supporting the load.

The efficiency of reeving systems ranging from one to eight parts is shown in charts which Union Wire Rope engineers make available to users.

Rule 5: Use the Tuffy Special Purpose Wire Rope "Tailored" to a Specific Application

There was a time when just any size and lay of rope was cut from a stock reel and used for just about any kind of service. It's different today. The various constructions of Tuffy Ropes are precisely fitted to each type of use.

There are thousands of different wire rope constructions. Union Wire Rope makes them all. But there's only one Tuffy line of ropes. Each Tuffy is the right rope and the best rope for the particular work for which it was developed. Each is "job prescribed". Each has the right balance of strength, flexibility and toughness to give you longest service, greatest efficiency and safety.

Union Wire Rope Corporation, Subsidiary of Armco Steel Corporation. Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand. 2156 Manchester Avenue, Kansas City 26, Mo.

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UNION Wire Rope

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3

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NCSA Safety Award Winners. Of 105 plants competing for top honors in 1957, 45 operated injury-free

NCSA meeting *continued from page 130*

which take about half of the laboratory time. Also, the Engineering Division follows closely the revisions in aggregate testing. It is desirable to keep abreast of developments in such testing, to be of maximum service in maintaining high standards of stone quality.

NCSA has contributed much to the First International Skid Prevention Conference. It was represented well in the formation of that conference by A. T. Goldbeck, engineering consultant. In his report on that conference, Mr. Goldbeck disclosed that many things other than road surfaces contribute to vehicle skids. Some are vehicle design, brakes, tires, highway design, psychology of drivers, and others. There is much deficiency in our knowledge of all these factors. Specifically, there is a need to review methods of measuring coefficient of friction and a great need for roads that have "built-in" protection against slipperiness.

There's been progress in safety, too. Number of participating plants in NCSA's safety contest grows each year. Of 105 plants competing for top honors in 1957, 45 operated injury-free. Also, the frequency of plant accidents has been on a steady decline. The Association's Accident Prevention Committee, headed by H. H. "Bud" Kerwin of Utica, N.Y., was instrumental in effecting changes in the forms and contest rules of the Federal Bureau of Mines' National Safety Competition. The result is a condensed contest entry form which can be more easily filled out.

In that connection, the committee also developed a more equitable basis upon which the NCSA Safety Contest could be conducted. Now, five production-size categories are established, to allow operators to compete on a more equal basis. A bronze plaque will be awarded each plant operating a calendar year injury-free in every category. In addition, the plant working the most injury-free man hours in each category will get an additional award.

Operating sessions were particularly good, and attendance was excellent. Subjects covered included progress in efficiency in production, present and possible future uses of ammonium nitrate blasting materials, plus increasing capacity of existing plants.

Efficiency in quarry operation is getting more attention, since the second report on the subject included many more (70) quarry operations than the first. Data on tons per man hour have been collected for two years by T. C. Cooke of Swampscott, Mass. Results of his report, in general, confirmed those of his first one. Mr. Cooke was able to give these findings: hard stone operators paid more attention to efficiency in 1958, since the soft stone quarries lost their advantage of greater efficiency that they showed in 1957. Larger quarries are more efficient than smaller ones. Plants that use large primary crushers are more efficient than those using smaller ones. Plants using jaw crushers as primaries are more efficient than those using gyratories. Southern quarries do a better job productivity-wise than do northern quarries. Mr. Cooke did specify that he had no answers as to why the survey results showed up as they did. He only reported the findings as they appeared on the surveys.

Use of ammonium nitrate for blasting came in for a lot of discussion. AN is here to stay, apparently. It can do a good job under proper conditions, but is not a cure-all for every situation. "Seek advice" of technical experts was offered as a suggestion to those using AN. Blasting at each quarry is a problem in itself, and technical assistance in proper use of the material should be obtained. Also, it is a good idea to seek counsel on proper methods of mixing AN on the property—if you hope to get a safety certificate.

Use of AN and fuel oil in quarry blasting represents a breakthrough in the explosive field. It now has become a do-it-yourself activity. But don't forget that AN/FO combination is a high explosive, even though it is among the least sensitive of all, or catastrophe may result. Several such catastrophes are on record.

Some new developments are taking place in the AN field. Slurries with AN have been found to be important where water problems are present. One new development was mentioned, but not described. According to reports, a new combination of AN/NB gives greater calories per gram than the 94-6 AN/FO combination. The only designation given for the NB compound was "no baloney," indicating that it was pretty powerful.

There are major problems and hazards that accompany the use of AN for blasting. These in-

Please turn to page 137

Cutting costs is the primary function of portable conveyors

To make the greatest cost savings, portable conveyors must:

. . . have quality construction for long life and trouble-free operation. They must be available in the length and capacity range to suit your needs. They must be available with the features and accessories you want—screens, power hoists, pneumatic or steel wheels, gas or electric drives, etc.

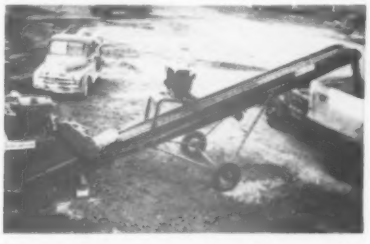
They must be easy to move around the yard . . . easily towed from job to job. They must withstand constant use and frequent movement.

Shown above is the portable conveyor of advanced design, the Barber-Greene 363. Shaft and gear reducer drive—no chains—no sprockets, full swiveling wheels, Acme take-ups and many other exclusive features.

Shown below are other models in Barber-Greene's complete line of cost-cutting conveyors.

Model 374 cuts cost at high capacity. With capacities up to 425 t.p.h., this heavy-duty machine has antifriction bearings, shaft and gearbox drive, hydraulic boom hoist and other features.

Model 358 cuts cost of car unloading. Feeding a conveyor, this car unloader releases cranes and other expensive equipment for other work. Handles gravel, sand, stone, cinders, etc.



Model 362—low-cost, high-quality portable. Three-roll carriers, swivel wheel truck, and many other features not available on conveyors of this low-price range, are standard on the 362.

56-8-PO

Write for literature on any portable in the Barber-Greene line.

Barber-Greene BG

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CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

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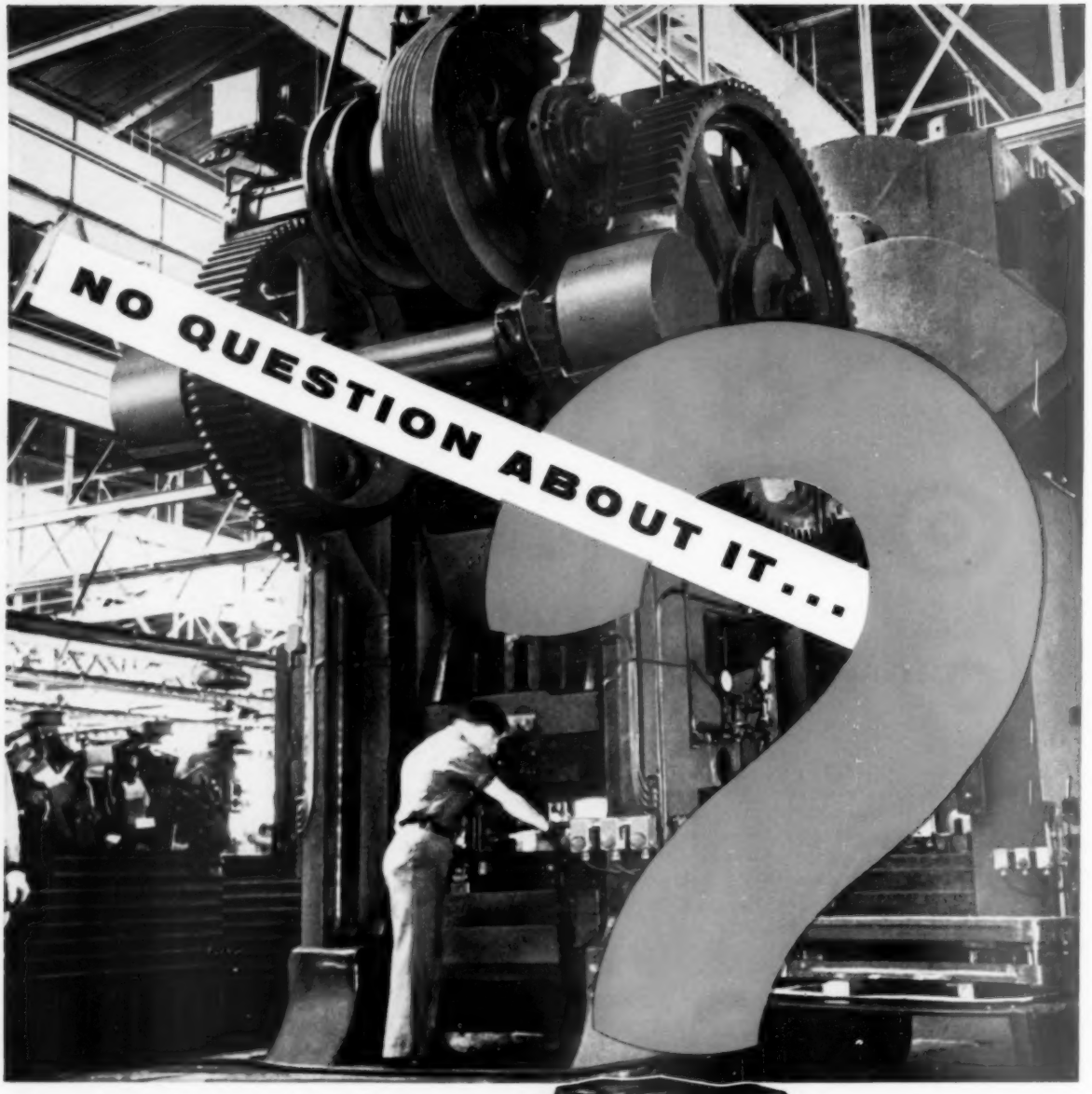

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- Is it readily available?—*Yes, it's yours on order!*
- Is there enough for any future need?—*Sure thing, the supply is practically limitless!*
- How about present and future cost?—*Price is stabilized by expanding mine mechanization and increasing efficiency of modern burning equipment.*

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BITUMINOUS COALS FOR EVERY PURPOSE

Ask our man! BALTIMORE & OHIO RAILROAD, BALTIMORE 1, MD., Phone: LExington 9-0400

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NCSA meeting *continued from page 134*

clude: (1) Attitude of AN handlers who should treat the material as a high explosive. (2) Problems similar to those that are associated with all types of explosives. (3) Additional hazards, including fire, misfires and fumes.

The AN Symposium speakers were: Frank J. Shalap, Occoquan, Va.; Dr. Melvin A. Cook, Univ. of Utah, Salt Lake City, and Dr. Robert W. Van Dolah, U. S. Bureau of Mines, Pittsburgh, Pa.

You can improve the productivity rate from your plant, but you have to find first the cause of repeated delays and bottlenecks that limit production. And to find those causes, you have to make suitable studies of operating phases. Julian Parton, General Crushed Stone Company, set forth specific examples of how his company had profited in higher output and improved profits through changes made at several of its plants. Each example was accompanied by complete description of the change involved and dollar figures to show investment required. This paper evoked an extremely high rate of interest among producers and equipment manufacturers.

Time studies are valuable in locating loading and transportation troubles. Analysis of the flow diagram often can highlight the points of trouble in the crushing and screening circuits. Another assist in this analysis is to compare the rated capacity of each piece of equipment with its actual output. But, Mr. Parton pointed out, the best information on trouble spots can be obtained directly from the men who run the plant.

A unique and successful part of the operating program was a full morning dedicated to a series of informal discussions, held concurrently, on all types of operating problems. Eleven wide-interest subjects were discussed at as many "round tables." They included: stripping, drilling and blasting, loading and quarry haulage, primary crushing and surge piles, secondary crushing and recrushing, conveying and screening, washing, stockpiling, stone sand production, implementing accident prevention practices, and underground operations. Also, a special table was provided for further discussion of Mr. Parton's paper, since interest in that regard was so high.

Discussion periods were limited to 25 minutes, to allow each of the discussion groups to convene six times. This method allowed interested parties to take part in several of the meetings. The interest showed in the session topped all expectations in many ways. Nearly every table was crowded at every session, and specific exchange of important information was good in all cases. It is beyond our ability to bring to you in this report the specific information that came from the 66 individual sessions. We can suggest, however, that you don't miss an opportunity to take part in the next similar session at future conventions.

The importance of sales to company and plant operation was covered fully in a session held concurrently with the first operating session. In particular, there is a growing need for stone salesmen to give technical service to customers in today's competitive market. C. T. Johnson, Wilkes-Barre, Pa., offered suggested methods for improving sales. C.F. Heidtman, Findlay, Ohio, gave good pointers on the use of effective sales promotion as a means of increasing sales. It's advisable to develop and handle sales, credit, price and collection policies in such a way as to keep good customer relations, according to H. E. Battin, Jr., South Bethlehem, N.Y. Also, you should coordinate work of the production and sales departments for best results. So said V. G. Aubry, Jr., Morristown, N.J.

Please turn to page 140

NCSA OFFICERS AND DIRECTORS

Elected for 1959

President
Warren C. Rowe, Rowe Contracting Co., Malden, Mass.

Vice President
George D. Lott, Jr., Palmetto Quarries Co., Columbia, S.C.

Past President
(and member of the Executive Committee)
N. E. Kelb, Cumberland Quarries Inc., Indianapolis, Ind.

Treasurer
J. Reid Callanan, Callanan Road Improvement Co., South Bethlehem, N.Y.

Secretary
J. R. Boyd

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Clarence Camp, II, Camp Concrete Rock Co., Ocala, Fla.
Charles Coburn, Waukesha Lime & Stone Co., Inc., Waukesha, Wis.
W. P. Foss, New York Trap Rock Corp., West Nyack, N.Y.
R. S. Reigeluth, New Haven Trap Rock Co., New Haven, Conn.
Nelson Severinghaus, Consolidated Quarries Corp., Decatur, Ga.
D. L. Williams, Virginian Limestone Corp., Ripplemead, Va.

Honorary Members
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H. A. Clark, Chicago, Ill.
S. P. Moore, Cedar Rapids, Iowa
H. E. Rodes, Nashville, Tenn.
O. M. Stull, Buchanan, Va.
Stirling Tomkins, West Nyack, N.Y.
Harold Williams, Brookline, Mass.

Manufacturers Div., NCSA

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Vice Chairman
George D. Fraunfelder, Easton Car & Construction Co., Easton, Pa.

Past Chairman
(and member of the Executive Committee)
Wayne W. King, W. S. Tyler Co., Cleveland, Ohio

Directors Elected to Executive Committee
J. M. Hume, Pettibone Mulliken Corp., Chicago, Ill.
F. A. Pampel, Chain Belt Co., Milwaukee, Wis.

DESIGNS of more efficient machines—or of a complete pack house from bins to loading dock—are continually being developed by St. Regis engineers.

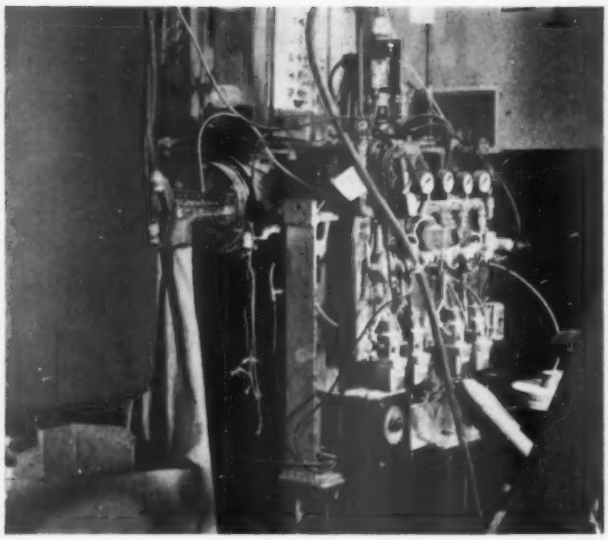
MEN AT WORK: PLANNING

L.C.P.T.—lower cost per ton (or per barrel)—means economical multiwall packaging of cement. It is brought about by a combination of research, bag design, packaging equipment and materials handling methods – all working together.

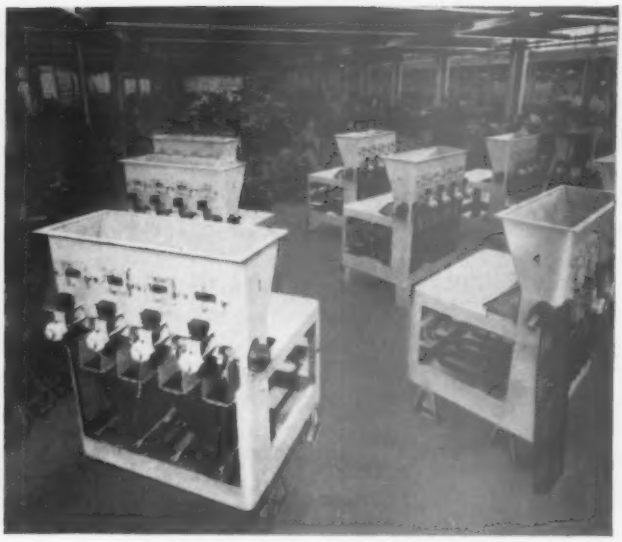
St. Regis maintains the widest range of research, engineering, development and testing facilities in the Industry. That is why St. Regis bags and equipment produce L.C.P.T. packaging today. That is the reason why St. Regis is able, also, to make continuous efforts toward producing cleaner bags, closer control of weights and even more efficient packaging methods.

At Providence, machines are designed, developed, built in prototype. They are shop tested, put on the job in the field. Then—and only after this exhaustive testing —they are manufactured for the cement industry.

In Pensacola, specialized experience and equipment, backed by extensive research facilities, result in better bags for the cement industry. Latest and most efficient



FLOW of solids is a new area for research that has been pioneered by St. Regis to help cement packers achieve lower cost per ton (or barrel) output.



PRODUCTION facilities at Providence where better machines are built. Seen under construction are 150FC packers (foreground)—latest in the cement field.

BAG DESIGNS that *sell* are a specialty of the St. Regis Pensacola facilities. A portion of the design department is shown here.

DELIVERY to meet your needs is assured by the strategic location of the eight St. Regis multiwall bag plants. Prompt service helps you to keep inventories at economic levels.

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cement bag is the super stepped-end multiwall bag.

In the field, St. Regis Sales Engineers bring unrivalled knowledge of both packaging and the cement business to bear on the specifics of each problem. Conveniently-located plants assure you of bag supply at all times.

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MULTIWALL PACKAGING DIVISION

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NCSA meeting *continued from page 137*

There's a growing market for large size aggregate in bituminous base construction, which is advantageous to the crushed stone industry. This was one major point brought out in the Friday technical session. H. M. Bixby, field engineer for NCSA, had an opportunity to observe and study this type of construction that has proved successful in New York, Pennsylvania and Ohio. He defined large size aggregate as one having at least 20 percent retained on a 1-in. sieve. Advantages with use of large size aggregate in this work include: (1) less costly to produce, (2) high stability and resistance to displacement in such materials as macadam, and (3) more economical when mixed with bituminous material because of lower asphalt requirement and greater ease of drying.

It was found that there is sufficient cohesion given by the asphalt cement in large aggregate mixes that segregation is not a serious problem. This is contrary to the opinion held by many engineers and contractors. In general, it is believed that large size aggregate bituminous bases have some of the advantages of both macadam and dense grades base course types, with few of the disadvantages.

When considering bituminous concrete placing, there are three important steps to consider: (1) design of mix, (2) producing the mix, and (3) placing the mix on the roadway. According to John B. Dunbar, Asphalt Institute, who replaced Donald D. Dagler of the same organization on the program, the latter is the most important of all. He reported on at least 13 areas that must be watched to get a good asphalt road. These included the use of machinery and processes. Essentially, it is Mr. Dunbar's opinion that placement control as well as plant control is essential to get best results in performance of a bituminous mix.

Special sessions—one for executives and one for accountants—helped to round out the convention program. Both were exceptionally well attended, which accented their importance on the program. Arthur Goff and his Cost Accounting Committee completed an important service for the Association and the industry when they compiled the new Cost Accounting Manual. NCSA has published the manual which is now for sale. Purpose of the special session for accountants and financial officers was to give an opportunity to clarify possible questions on the manual's application and use. Assisting Mr. Goff on the panel were two other experts: John J. Fox of Detroit, Mich., who assisted in preparation of the manual, and Carl M. English, Washington, D.C., who is an associate of Gall, Lane and Howe, general counsel for NCSA.

Mr. Fox urged that top management and accounting people read the manual, for in it may be found some ideas that are particularly adaptable to your business. Mr. English suggested that some producers may wish to set up a separate auxiliary accounting system for tax purposes. In court cases, he said, available records determine the value of the position in many instances.

Much discussion came in the form of questions from the floor, which tended to lean toward the tax position. Questions on depletion and depreciation were predominant. With specific reference to a question on salvage value, Mr. English stated that IRS field agents and Washington were giving different stories. He suggested that agents are overdoing the salvage "thing," and that the individual should try to convince the agent that he should seek advice from Washington.

Another special session was held strictly for executives. The presentation by Mr. I. Austin Kelly, III, New York City, on "Tax Advantages of a Pension or Profit Sharing Plan" was closed to the press. John F. Lane of Gall, Lane and Howe in Washington also discussed "Federal Laws and Legislation of Significant Interest to Stone Producers." This particular meeting gave executives an opportunity to question the two experts on any matter pertaining to their specialties.

Mr. Lane, however, earlier in the convention pointed out that labor was the real winner in the last national election. This is contrary to the concept normally held by the public. According to a survey by Congressional Quarterly, Congressmen classified as pro-labor in the House have a 20-vote majority; they have an 18-vote margin in the Senate. Mr. Lane suggested that the federal government faces its most severe test for survival, since the situation in Congress represents a "special interest" concept. It took 15 years for labor to effect its present position in Congress through political organization.

What can be done about it? There is no immediate solution, but there is one. The answer lies in creation of a great public awakening to what is happening. It must be done through education and dissemination of public information.

Two guests provided a double punch to end the convention. John Morley, Foreign Correspondent who has covered the world's big news for 27 years, gave two "uncensored" opinions of "inside Russia." They are: (1) more hope behind the Iron Curtain today than in 28 years, because there's more division in Russia now than ever; (2) religion is growing behind the Iron Curtain, and the power of faith will triumph over the power of materialism.

Mr. Morley is amazed at the gullibility of the American people toward the apparent goodwill of foreign visitors, and he mentioned Mikoyan as an

Please turn to page 154

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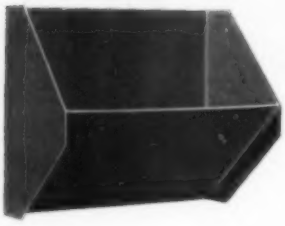

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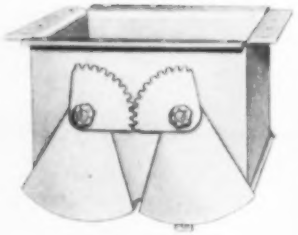

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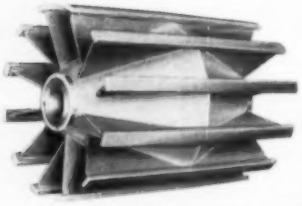

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Rocky's Notes *continued from page 21*

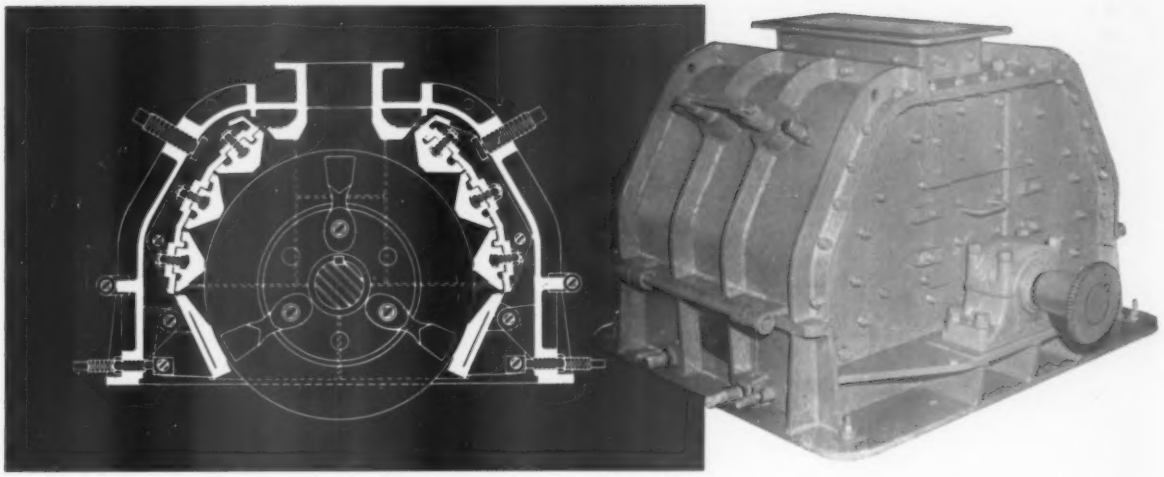
In contrast, the research reported in the Proceedings of the Japan Cement Engineering Association appears to have been done almost entirely in the laboratories of the member companies and those of the leading universities. In numerous instances the papers are co-authored by cement company engineers or chemists and university professors or other outside experts. It would take too much space to even list the titles and authors of the 78 papers here. They cover practically all approaches to the scientific study of cement and concrete—nearly all of them reports of research on one single phase of such a study or investigation.

Reference to a list of the research bulletins of the PCA shows that the titles indicate much more comprehensive studies such, for example, as "Osmotic Studies and Hypothesis Concerning Alkali-Aggregate Reaction" and "New Study on Reactions in Burning Cement Raw Materials." Contrast these with the titles of some of the Japanese research papers: "Difference of Thermal Properties between Pure C_3S and C_2S Synthesized with MgO or CaF_2" and "Effects of Adding Inorganic Salts to and the Remixing of False-Setting Portland Cement." The Japanese experts apparently believe in studying only one factor of a problem at a time. It is not for us to say which is the best avenue of approach but it looks logical to one layman that he can perhaps get a better grasp of a complicated problem by considering one factor at a time.

Of particular interest to us are several papers on portland blast-furnace slag cement and portland pozzolan cement. We have yet to learn of American cement industry executives meeting as a group to listen to papers or discussions on the virtues of either of these kinds of cement. Yet it has become obvious that they are in some respects superior to straight portland cement. In the case of the Japanese cement industry we find two employes of one of the cement companies contributing a paper on "Effect of Fineness of Granulated Slag and Portland Cement Clinker on the Technical Properties of Portland Blast-Furnace Cement," in which they came to the conclusion that "when the two materials were charged in equal volume to the same compartment of the grinding mill, the difference in grindability cannot be detected; if the fine-grinding of both materials is continued, granulated slag can be ground under normal conditions until it becomes fine powder, but the clinker cannot be ground so fine because of the occurrence of coating on the grinding media (balls) and particle segregation."

Their conclusions continue: "We found that the effect of fineness of the slag on the development of

Please turn to page 145



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Pictured above is one of several types of Pennsylvania Reversible Impactors. The breaker block areas on both sides of the mill are adjustable, permitting the operator to move the blocks towards, or away from, the hammer circle. The upper blocks on each side of the rotor can be adjusted independently of the lower blocks, and vice versa. This complete adjustability gives you option of product size, within a reasonable range, and assures uniformity and constant tonnage of product during the entire life of the hammers and blocks—a money saving feature that is very desirable. For complete information on the entire line of Pennsylvania Reversible Impactors, send for bulletin 6018. Pennsylvania Crusher Division, Bath Iron Works Corporation, West Chester, Pennsylvania.

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Rocky's Notes *continued from page 142*

strength was greater than that of the clinker, by determining the strengths of cements having various amounts of slag content, and comparing them with that of ordinary portland cement. The effects of fineness of both materials on the shrinkage due to drying of cement mortars are as follows: The finer the grind the greater the shrinkage, but the effect of the clinker is greater than that of the slag, and if the slag content is increased, the shrinkage of the mortar becomes smaller. The shrinkage of the slag content occurs at the beginning of hydration and that of the clinker follows. By mixing slag in portland cement, we can obtain a mortar having a smaller volume change [than straight portland cement] in the final state." They also tested concrete specimens by freezing and thawing and found that the specimens containing 50 percent slag and 50 percent portland cement clinker had the same durability as that of the straight portland cement specimens.

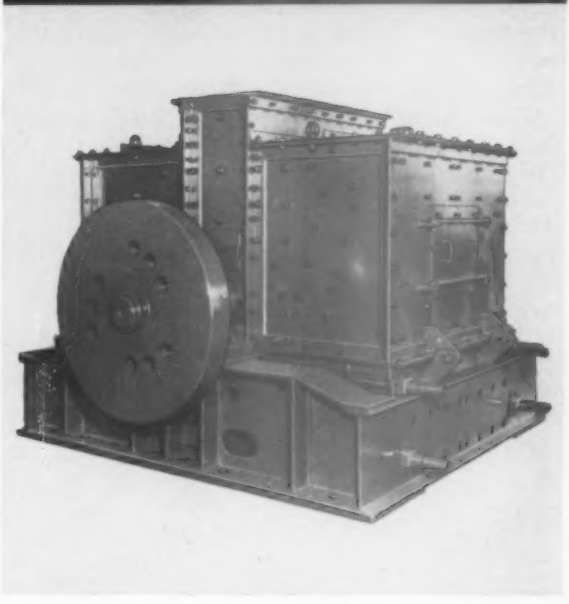
We have quoted that much from a single paper partly to show that it would be rank heresy for cement-plant employes in the U.S.A. to present such a paper to the executives of their industry, but also to show what detailed and helpful information can be found in these papers. It illustrates that working on a single factor can at least develop practical or useful information. We hope to find space in a later issue to quote some of the other conclusions published in abstract in these papers. As a whole they are remarkably well done in the English language. We find a few places where the author or translator seems a bit confused on terminology, but in most instances there is no doubt of the meaning intended. Judged by some of the prewar papers we used to receive from Japanese authors we conclude that the Japanese have made a great deal of progress in their mastery of the English language in the past decade. **END**

Fringe benefits *continued from page 79*

eventually threaten to undermine the ability of the company to do business at all.

Since the end of World War II, fringe payments as a percent of payroll have almost doubled. The most precipitate growth has come in pensions, Social Security, and paid vacations and holidays. There is no indication that there is going to be any slackening of effort to continue pushing fringes onward and upward at the same headlong rate. *Please turn to page 146*

Another size reduction problem solved by Hammermills, Inc.



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Reduces 6" to 8" Limestone to ½" and under at 400 T.P.H.

Limestone in one installation contains 15 to 16% silica. This Bulldog Reversible Impactor, used as a secondary crusher, operates in a closed circuit with a power consumption of 600 h.p.

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Fringe benefits *continued from page 145*

The increases will be sought in four ways: in new types of benefits, in higher costs of existing benefits, in increased duration of benefit payments, and in increased number of individuals covered.

We are living in a period of great social change. The businessman who is sensitive to this has a tendency to give in on the fringe benefits as simply a manifestation of these inevitable changes. But before he gives in too easily in the future, he should take a long, hard look at the total picture of fringe benefits—then set a calculated course to keep them within the bounds of good sense and good business. Only in this way can we keep our economy from running away with us on the ephemeral wings of the utopian promises offered on the surface by more and greater fringe benefits.

SO_3 content *continued from page 112*

cements, it would probably not be far from 2,700 or 2,800 sq. cm. per g. To compensate for the difference in fineness, the c constant in (1) has been raised from 1.1841 for cements of 1,900 fineness to 1.1841 + .5000 or 1.6841 for the Type III cements and c constant for (2) has been raised from 1.2288 to 1.7788, (Table II, columns 3 and 6). A comparison of the computed values and test values for all the cements except Cement F, is shown in Figure 2.

We record a statistical examination of Lerch's data on the optimum SO_3 content of portland cement in the form of two linear equations. These show the effect of C_3A and the alkalies in the clinker on the optimum SO_3 content of the cement. The computed coefficients of determination and correlation are so large as to leave little doubt that these constituents (C_3A and alkalies) are the major compositional factors governing the optimum SO_3 requirements of the cement.

The relative magnitudes of the regression coefficients indicate that the effect of the alkalies is greater than we ever suspected compared with the effect of C_3A. In our opinion, Lerch's data has exceptional precision, accuracy, range of chemical composition, and number of tests. A correlation based on his data may be used with more than ordinary confidence.

The optimum SO_3 determined by tests in two other sets of data was compared with the optimum SO_3 predicted by the use of the two equations. The

Please turn to page 149

600 cubic yards of "hardpan" every 24 hours . . .

Ten minutes' maintenance every eight hours with this Blaw-Knox Clamshell Bucket

On the western shore of Lake Huron, The Roen Steamship Company uses this custom-built, 5½ cubic yard Blaw-Knox clamshell bucket to dredge 160,000 cubic yards of rock-like sand, gravel and clay for the Harrisville, Michigan Harbor of Refuge.

Ray Pesch, project engineer says, "In spite of this rugged duty, the bucket requires only normal maintenance. In 77 days of digging we've removed about 25,500 cubic yards of hardpan, including boulders up to seven tons."

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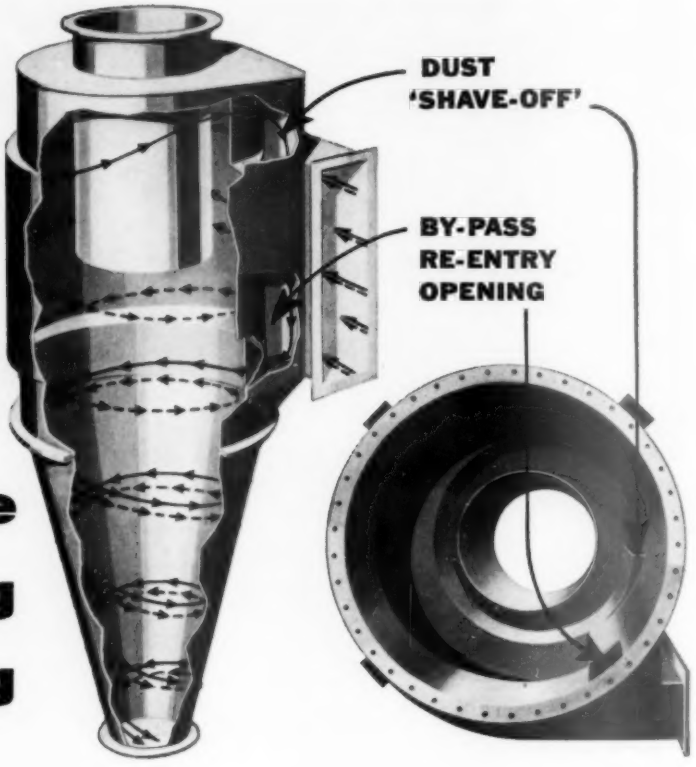

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Buell's exclusive 'Shave-off' design permits large diameter cyclones that will not clog, plug, or bridge when properly operated: you avoid unnecessary maintenance work or process interruptions.

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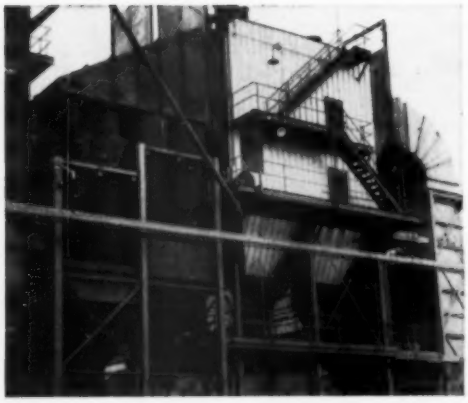

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SO_3 content *continued from page 146*

c constants in the equations could be adjusted to compensate for the fineness of grind. By doing so, the optimum SO_3—as determined by tests and the predicted optimum SO_3—would not be greatly out of line in 18 of the 19 cements included in the two sets of data.

From the excellent correlation obtained in Lerch's data, we believe that any cement manufacturer could develop a similar linear equation for his own material and processes. An analysis of his clinker then would permit an accurate estimate of the optimum amount of gypsum to be added to his clinker. **END**

Fly ash *continued from page 87*

The process is continuous, the pellets slowly descending from the top of the kiln until they reach the revolving grate at the base. Through suitably shaped openings in this grate, which is also designed to break up the larger clusters, the sintered pellets emerge to be screened, graded into sizes ¾ x ⅜ in., ⅜ x 3/16 in. and 3/16 in. x 0, and stored in hoppers.

The rate of combustion and the temperature (which attains a maximum of 2,000 deg. F.) are controlled by the draft into the kiln and are regulated by means of instruments lined with thermocouples located at strategic points inside the kiln.

Typical aggregate weights are:

Large	¾ x ⅜ in.	48 lb. per cu. ft.
Medium	⅜ x 3/16 in.	50 lb. per cu. ft.
Fines	minus 3/16 in.	65 lb. per cu. ft.

The weight of concrete made with the material will vary with the mix, but typical concrete weights are 68 lb. per cu. ft. for an 8-1 no-fines mix, giving 600 psi. crushing strength, and 92 lb. per cu. ft. for a 3-2-1 graded mix, giving 3,000 psi. crushing strength. The moisture movement and drying shrinkage of the concrete are very low, about .025 percent in each case. **END**

NSGA meeting *continued from page 106*

Results of Industry Bargaining with Labor Unions in 1958 and Danger Signs for 1959." Wages increased about 6 percent last year, as a national average. Fringe benefits rose, too, to bring an estimated total labor cost increase to somewhere around 15 cents per hour.

Please turn to page 150

STARSTEEL
HEAVY DUTY SPACE SCREENS

More than double the service life is reported for STARSTEEL screens in many cases. The special high carbon alloy wire used in these rugged, rigid screens is amazingly wear-resistant and tough.

Precision weaving is another reason STARSTEEL screens last so long. Openings stay accurate—the absolutely square hook strips fit machines better, install easier, insure uniformly tighter tension that resists buckling, distortion, breaking. Get double value from every screen dollar—buy STARSTEEL!

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For complete spray nozzle information write for Catalog 24.

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NSGA meeting *continued from page 149*

There are definite danger signs for 1959. Unions will ask for and get more, for they present a ruthless, uncompromising naked show of power, backed up by unlimited cash resources. The businessman must face that power. But he also must know that if his labor bill continues to rise, he may face governmentally imposed wage and price controls some day. Controls only worsen a bad situation.

For the future, Mr. Ahearn suggested that the trend is toward uniform contracts written at international headquarters of the union. There is no likelihood that unions will be more restrained in 1959 than in 1958. Nothing that Congress will do will help employers to cope with union demands for increases.

In conclusion, Mr. Ahearn suggested the first step for an employer in getting good labor relations is to recapture the loyalty of your employes. Make adequate preparations for the collective bargaining ordeal and have the courage and faith to stand for a principle. The union threat must be met by power—above all, moral power.

Next meeting of the Association will be February 15-19, 1960, at the Conrad Hilton Hotel, Chicago, Ill. It will be a combined convention and exposition, in conjunction with the National Ready Mixed Concrete Association. The NSGA Board of Directors will meet next September 27-30 at Lake Placid Club, Lake Placid, N.Y. One day will be spent in a meeting in Washington, D.C., prior to the Lake Placid meeting, to allow Directors to inspect Association facilities at headquarters. END

NCLI meeting *continued from page 122*

However, the meeting was not unanimous in approval of the unit. Drilling speeds have not been increased in every quarry. In fact, there was one report of complete failure to drill a hole. The unit has only recently been made available, and it is expected that its several disadvantages will be overcome. At the moment, the maximum hole is 3½ in. diam. and the maximum depth about 60 ft. As producers insist on larger, deeper holes, it was reported that the manufacturer will offer larger equipment.

Sensation was not the only feature of the meetings. W. B. Hicks, Rock Products Engineering, Hewitt-Robins, Inc., presented a carefully organized survey of some of the typical materials-handling problems of limestone producers. This

Please turn to page 152

⅜-inch cord was the primer used with oil-soaked Spencer N-IV Ammonium Nitrate for this blast.

The 28,000 pounds of Spencer N-IV Ammonium Nitrate is now ready for shooting the overburden blast at Calaveras.

Forty 9-inch holes, each containing 700 pounds of material, are shot simultaneously.

27,000 cubic yards of material were moved with such good fragmentation there was no need for secondary shooting.

Progressive Calaveras Cement Company shows how to . . .

Save $7.00 To $10.00 Per Ton Of Blasting Material:

Big saving in priming costs plus greater blast energy make new Spencer N-IV most efficient, low-cost blasting agent:

The easiest, most economical blasting method known is now cutting costs and speeding up blasting operations in the Calaveras Cement Company quarry at San Andreas, California. By using new Spencer N-IV Ammonium Nitrate, they are able to save about $7.00 to $10.00 in priming costs per ton of material used.

Different from any prilled ammonium nitrate now on the market, Spencer N-IV reduces priming costs because it can be initiated with a single strand of ⅜-inch detonating cord. There's no need to attach additional material at intervals, or employ other complex priming methods —and you don't have to store high explosives on the job site!

The superior blast effect and easier detonation of Spencer N-IV are the result of a special structure which allows the prills to absorb oil more easily. Combine this with the fact that Spencer N-IV contains a much higher percentage of ammonium nitrate than other brands, and you can see why N-IV gives consistently better fragmentation.

Completely free-flowing for easy loading, Spencer N-IV is packaged in 50-lb. polyethylene plastic bags, as well as 50, 80 and 100-lb. multiwall paper bags. Two years of tests have proven that the polyethylene bags are tougher than paper and can reduce bag breakage as much as 50%. No more trouble with leaking oil—and these bags are so moisture-proof they can actually be stored out doors!

For more information on new Spencer N-IV Ammonium Nitrate in polyethylene plastic or paper bags, mail coupon today!

SPENCER®

Spencer Chemical Company
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Kansas City 5, Missouri

At no cost or obligation to me . . .

☐ Please rush complete information on Spencer N-IV Ammonium Nitrate for low-cost blasting.

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Company.....

Address.....

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LOW COST POWER
For Fast "Secondary Breakage"

FREDERICK
CAST SEMI-STEEL
DROP BALLS

Tough, rugged Frederick Drop Balls give you crushing power where you want it, when you want it . . . cut down expensive drilling or blasting . . . give long, economical service with little or no maintenance. Exclusive "Pear shaped" design withstands greater impact—drops straighter. "E-Z Swing" recessed steel eye gives cable protection plus free swinging action. Use Frederick Cable Weights (135 & 250 lbs.) and Frederick Swivels on all size balls for true, safe cable performance. Nickel alloy standard on all 4000 lbs. or over—or special alloys furnished on request. Balls can be furnished with replaceable pins. Special release hooks for free dropping also available.

Write us today for prices and illustrated literature. Order Balls direct or see your nearest Equipment Dealer.

	Wide Range of Sizes and Weights:							
Pear shape (lbs.).....	1500	2000	3300	4000	5200	6500	8000	10,000
Ball shape (lbs.).....	500	1000	2000	5200				
Spherical shape (lbs.) .. (for magnet use)	470	930	1650	2400	3000	3700	5400	6900

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FREDERICK *Established 1890* MARYLAND
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NEW
ROTO-GUARD*
SHAFT MOTION INDICATOR

Connects to rotating shaft

Actuates warning lights or other signals. Operates control switches.

PROVIDES positive indication of drop in speed or stopping of machinery

PROTECTS conveyors • elevators • feeders • belt conveyors

OPERATING SPEEDS of 10 to 150 rpm make the **ROTO-GUARD** applicable to automatic protection of slow-moving machinery used in material handling and similar systems

RUGGED AND COMPACT: approx. 5" x 6" x 6".

SIMPLE • POSITIVE • RELIABLE • LOW COST

A Development of
THE BIN-DICATOR COMPANY
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Specialists in Automatic Control Devices for Material Handling Systems for Over 20 Years

*TRADE MARK

Write for Bulletin RG-16

WE SELL DIRECT • PHONE ORDERS COLLECT

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NCLI meeting *continued from page 150*

analysis is of vital importance to producers whose primary problem is the cost of moving huge volumes of material. Mr. Hicks' discussion was the prelude to a lively forum on producers' production problems which seemed to center on new drilling techniques and vibrating screen efficiency. The concern about specific problems was carried through to the afternoon meeting when representatives of NCLI's manufacturers division met informally with producers to discuss specific, individual operating problems.

This, the 4th annual convention of the NCLI, was probably the best-attended of all. A large audience at the January 21 luncheon heard Webster C. McEachern, chief of the Public Utilities Section, Engineering and Valuation Branch of the Internal Revenue Service, comment on the legal limitations and interpretations of depreciation and salvage calculations in the rock products industries. Another record crowd at the January 22 luncheon heard Dr. Robinson Newcomb develop his thesis that the "Highway Program Is Big—But It's Not Big Enough."

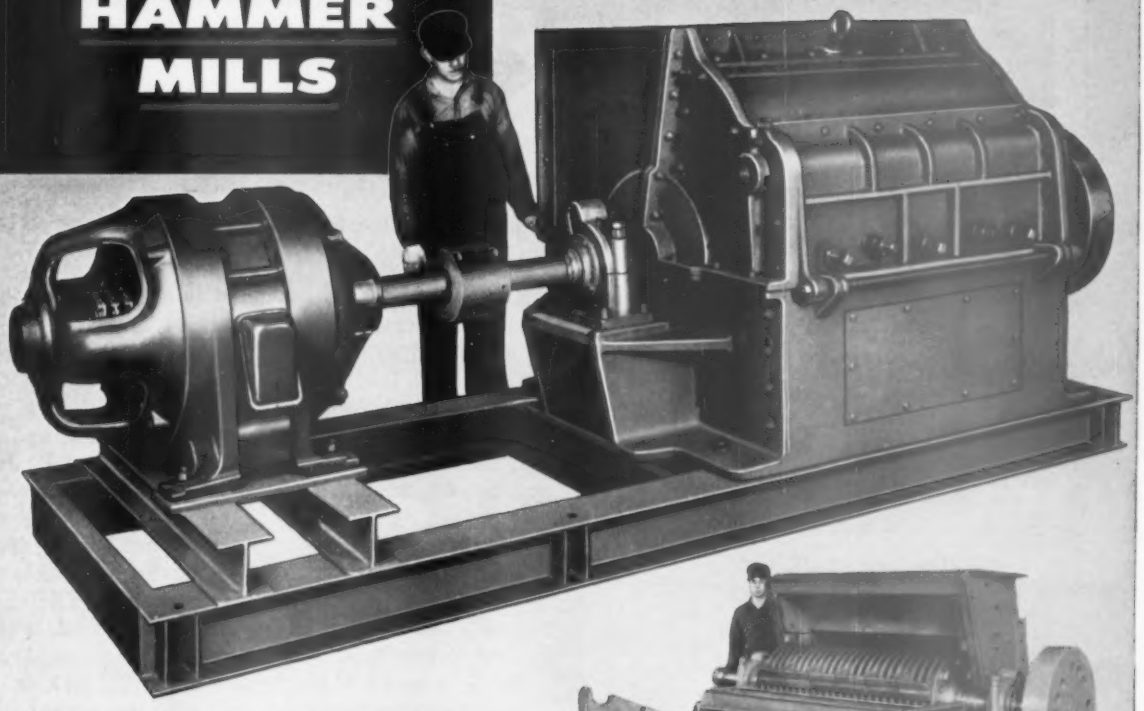
The highway program came in for a thoroughgoing analysis and evaluation by three other speakers: A. C. Leonard, Bureau of Public Roads; Arthur C. Butler, director, National Highway Users Conference, and Elmer M. Ward, assistant director, Highway Research Board — National Academy of Sciences, National Research Council.

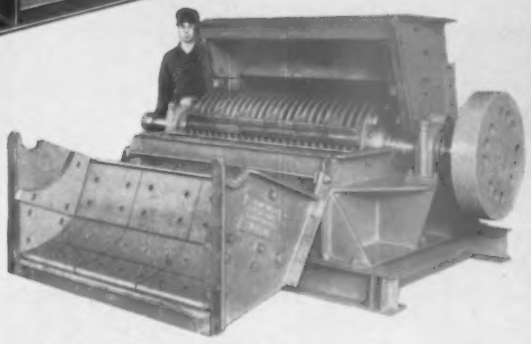
Since the highway program is so close to most limestone producers, its physical progress and possible extension, the development of plans for current and future financing, and research in construction techniques are all of vital importance to producers. Not only does the program, with all its ramifications, provide everyday business for producers, but it certainly will be the basis for an ever-greater volume of business as highways and secondary roads reach every part of the country. Then, not only will new roads require plenty of rock products, but new industries and homes will bring unprecedented prosperity to producers.

This rosy outlook will be tempered by the ways in which the money is spent. It is conceivable that the burden of taxation—either from financing new roads or from loss of revenue in many localities—will reduce or eliminate benefits to many rock products producers. Whatever the subject matter, all speakers at this convention (and at many similar gatherings) dealing with the highway program are agreed: We are just beginning to feel the effects of the program, and these effects will be profound and far-reaching for all rock producers.

Please turn to page 154

WILLIAMS *heavy duty* HAMMER MILLS





- **Crushes, Grinds, Shreds To Finished Size In One Operation**
- **Reduces Production Costs Up To 50%**
- **Saves Up To 75% On Equipment Cost**

Williams No. 60 GA Mill with heavy duty steel plate frame. Cover has been opened to show heavy duty manganese steel liners, breaker plates, grate bars and hammers.

Whether your size reduction job involves crushing, grinding or shredding—whether the material is mineral, chemical, vegetable or animal—Williams has a hammer mill designed to *do it from start to finish in a single operation.* More uniform product, increased output, plus savings in time and labor can *cut production costs as much as half!*

Extra primary and secondary crushers are seldom required with a Williams—no extra drives or conveyors, no costly foundations or buildings for additional crushers are necessary. Expensive maintenance, replacement parts, excessive downtime and labor are reduced to a minimum.

Learn how a Williams hammer mill can step up your output, and improve your product quality. *Write—explain your operation—and ask for a catalog.*

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
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WILLIAMS
CRUSHERS GRINDERS SHREDDERS
Oldest and Largest Manufacturers of Hammer Mills in the World

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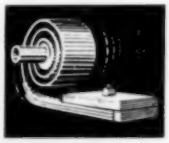
Whether scalping or sizing, Overstrom Vibrating Screens take it, and come back for more! (Write Dept. RP-2 for new 8-page catalog.)

LOOK FOR THE INVOLUTE SPRINGS ... HIGH STRENGTH, LOW STIFFNESS ... NO WASTED ENERGY!



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T.C. WRITE FOR CATALOG 56

DURABLE ECONOMICAL WOVENWIRE SCREENS KNOWN AROUND THE WORLD

TWIN CITY IRON & WIRE CO.
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Slurries... *handled at lower cost*

The new WILFLEY MODEL K Centrifugal Sand Pump embodies important mechanical improvements especially adapted to the handling of cement slurry and results in stepped-up production and substantial power savings. Individual engineering. Write for details.

Buy WILFLEY for Cost-Saving Performance

A. R. WILFLEY and SONS, Inc.
Denver, Colo., U.S.A.

WILFLEY centrifugal PUMPS

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NCLI meeting *continued from page 152*

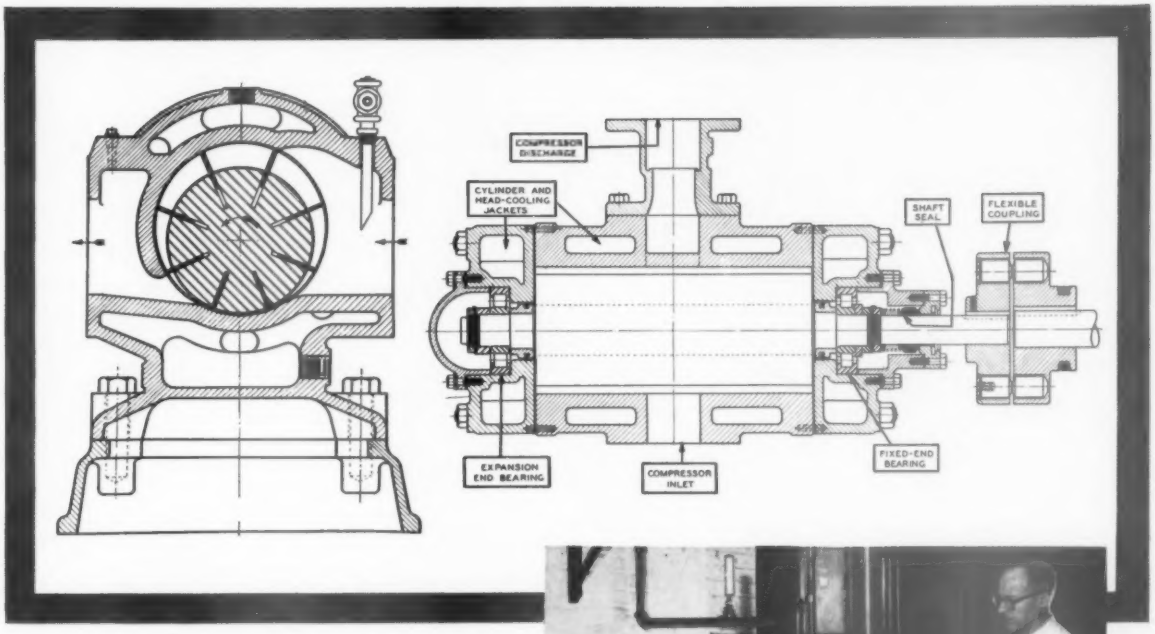
Newly elected officers of the National Crushed Limestone Institute, Inc., include Thomas E. Lalley of Bradford Hills Quarry, Inc., East Petersburg, Pa., who succeeds Paul W. Seitz of Fort Wayne, Ind., as president. E. B. Snead of Texas Crushed Stone Co., Inc., Austin, Texas, was elected first vice president. He follows Mr. Lalley in that office. Robert M. Koch and Taisto Laine were re-elected executive vice president and secretary-treasurer, respectively. **END**

NCSA meeting *continued from page 140*

example. He recently visited this country for four reasons, according to Mr. Morley. He came (1) to bolster the prestige of the Communist Party, (2) to bolster the Communist Party in the United States, (3) because of a rift between Russia and China, and (4) because the USSR is bankrupt.

The last punch came from Dr. Burnice H. Jarman of George Washington University, Washington, D.C. He suggested that 75 percent of our success is not due to what we know, but how we have been able to get the job done through others—which was the subject of his address. The chief tool we have in dealing with others, he said, is putting yourself in the other fellow's place. Don't think in terms of people as a mass, but look at the qualities that don't show: intelligence, energy output and thinking ability. Then, use those qualities to best advantage in getting the job done.

The meeting adjourned until the combined Convention and Exposition in Chicago during the week of January 21, 1960. **END**



Hard service never affected this Fuller rotary's original output—230 cfm. of air at 90 lb. G., reports Mr. Schott, chief engineer, Thomas C. Wilson, Inc., Long Island City, N.Y.

FULLER ROTARY COMPRESSOR RUNS 13 YEARS WITHOUT DOWNTIME

A Fuller rotary at Thomas C. Wilson, Inc. got its first maintenance shutdown recently, for renewal of roller bearings and rotor vanes—after running without downtime since 1945.

4 years of 24-hour service. The Wilson plant makes tube cleaning equipment, tube expanders and portable pneumatic tools, and so makes heavy daily demands on shop air. For the first four years, three-shift operation kept the Fuller rotary running round the clock. Since 1949, it's been working eight-hour shifts.

Simple design means trouble-free service. Besides bearings, the only moving parts in a Fuller vane-type rotary compressor are the cylinderical rotor and the blades. These compensate for wear automatically. Cylinder head slips off, permitting blade and bearing inspection in a matter of minutes.

Compact and vibration-free. Direct-drive system saves space. Simple, rugged design gives constant service without extensive supervision. Thus, Fuller rotaries can be installed out-of-the-way—on upper floor, on balconies, in basement corners, using low-cost, light-weight foundations.

1189
C-340

Write today for detailed information on the full line of Fuller rotary compressors for in-plant services, gas gathering, and industrial refrigeration.

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GENERAL AMERICAN
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FULLER COMPANY
102 Bridge St., Catasauqua, Pa.
SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION
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Fuller
....pioneers in harnessing AIR

PIONEERS OF HIGH-EFFICIENCY VANE TYPE ROTARY COMPRESSORS SINCE 1930

Enter 1497 on Reader Card

NEW LITERATURE

Shovels and cranes

LINK-BELT SPEEDER CORP. has released two 20-page catalogs describing its shovel and crane models K-370 (1¾ cu. yd.) and K-608 (3 cu. yd.). The colorful booklets describe quality design features, including power hydraulic controls, power steering, exclusive centerpin trunnion and oscillating conical rollers, and easier job-to-job transportability.

Enter 700 on Reader Card

Cement plants

MIAG NORTHAMERICA, INC., has made available a color catalog describing the features of wet and dry process cement plants it designs and builds. One interesting feature described in the booklet is the firm's preheating calcinators for thick-slurry rotary kilns, which use kiln exhaust gases. MIAG-built plants are found all over the world.

Enter 701 on Reader Card

Dust collectors

WHEELABRATOR CORP. has released a 24-page handbook entitled "Industry Relies on Dustube Collectors for Efficient Dust and Fume Control." It describes cloth and glass bag-type dust collectors, and indicates many industries which benefit from their use. The booklet gives principles involved, examples of units in use, and mentions situations where high temperatures and corrosive action make synthetic and glass cloth bags desirable.

Enter 702 on Reader Card

What is a standard?

AMERICAN STANDARDS ASSOCIATION has issued a booklet entitled "What is a Standard?" It describes the nature of the association's work and tells what a standard is.

Enter 703 on Reader Card

Data manual

THE KLEMP METAL GRATING CORP. has published a data and specification manual containing the newest safe load tables for welded and riveted gratings, data on new aluminum gratings, panel width constant chart, methods of anchoring, comprehensive tables on stair treads and methods of ordering.

Enter 704 on Reader Card

Injector drill

HOUSTON TOOL CO. has released a data sheet describing its model H.D. 250 Hi-Vac injector drill. It can be used for several jobs: continuous-flight earth auger, to take an undisturbed 2-in. dry core, as a vacuum drill to take complete dust samples of strata or as either a forced water or reverse-flow water drill.

Enter 705 on Reader Card

Bonded rubber-metal products

CLEVITE HARRIS PRODUCTS, INC., has available a booklet describing its wide line of products in which rubber is bonded to metal. They are engineered to accept misalignment, isolate vibration, eliminate lubrication and cushion shock loads in all types of service. The booklet describes the uses and manufacture of the products, and the types available.

Enter 706 on Reader Card

Gyratory crushers

KENNEDY VAN SAUN MFG. & ENGR. CORP. is distributing Bulletin 58-D, describing the 10 sizes of gearless gyratory crushers the firm makes. Capacities range up to 950 tph., and openings, from 9½ to 85½ in. The firm's self-aligning eccentric bearing, the drive method, cavity design and tramp iron protection are described.

Enter 707 on Reader Card

Belt conveyors

WESTERN MACHINERY CO. has issued a bulletin describing the firm's custom-engineered belt conveyors and telling how to estimate conveyor requirements, including horsepower, belt speeds and belt capacity.

Enter 708 on Reader Card

Bulk weighing scale

RICHARDSON SCALE CO. has issued a bulletin describing its model MSM scale, a bulk weighing unit for dry and free-flowing as well as sluggish materials. The gravity-fed unit, which uses an agitator for materials which do not flow readily, is described in Data Sheet 5807.

Enter 709 on Reader Card

Vibrating screens

SYNTRON CO. has released a new data sheet on its Syntron-Sinex electromechanical vibrating screens. The "unbalanced motor" unit, which has a self-contained drive that eliminates belts, chains and separately mounted motors, is made in double and single-deck models. Both types are available in 4 x 6-ft. and 5 x 10-ft. sizes. The units feature tri-directional vibration, which is said to give rapid feeding and discharge, yet permit good stratification of rock sizes.

Enter 710 on Reader Card

Crusher parts manual

ALLIS-CHALMERS MFG. CO. is making available to owners of its crushers a manual for each model. The manuals are said to be especially valuable in speeding ordering of repair parts because parts numbers and a description of each part are given. The manuals also note which parts on various Allis-Chalmers crushers are interchangeable. They give quantity and an outline drawing of each crusher to show the location of parts.

Enter 711 on Reader Card

Soil exploration

MOBILE DRILLING, INC., is distributing a 16-page report entitled "Men Build Highways—Drills Make It Profitable." It describes how sub-surface exploration, including drilling, sampling and testing, is helping contractors and state highway departments save money by showing them what are the existing soil conditions at the proposed road site.

Enter 712 on Reader Card

(Continued on page 158)

Ask your Allis-Chalmers dealer to show you "And a Great Deal More"

"This 2-yd Loader Gives Us the REACH We Need at $2,000 to $3,000 Savings on Purchase Price"

"With our crushed stone and lime loading specifications running in excess of 1,000 tons per day," asserted Mr. Walter Van Gorden, treasurer-manager, Cave Stone Company, Cave Indiana, "our requirements on loading equipment are as critical as on any of our manufacturing units. All of the efficiency and production engineered into our excavation and processing equipment is of little value if we cannot maintain like values on the delivery end.

"Because of this, we investigated every available loader on the market before buying our TL-20 TRACTOLOADER* in September, 1957. This decision was made on the basis of actual tests with each piece of equipment which indicated that the TL-20 consistently operated faster, reached farther, lifted higher and gave us more pounds per bucket than anything else in its class. *We would have had to spend $2,000 to $3,000 more for a machine which would equal its production potential.*

"Our two primary requirements for a loader are height and reach. If bucket capacity were our only concern, we could have approached the load of our present unit by simply buying a larger machine of the same make as our previous one. The TL-20 was the only one available in this price class with a two-yard capacity, but, *more important, was the height of the lift and the length of the reach.* With competitive machines, we would have to load the 8 to 14-ton trucks from both sides to get maximum load and balance. The TL-20, on the other hand, has a dumping height of 9 ft with a reach of 34 in. at this height. This increase means that we can easily load from one side without damaging the truck or holding up the driver over 4 minutes.

"Now, with this one machine, we are handling 80% of our loading, and have not yet extended it to its limits. We have yet to become involved with any type of maintenance other than the normal routine upkeep required on any piece of mechanical equipment. In spite of the rugged nature of the application, we expect a minimum of 5 years' service from the unit, and in all probability will replace it with an identical loader."

Let your Allis-Chalmers dealer show you how TRACTOLOADERS can increase your production.

*TRACTOLOADER is a registered Tractomotive trademark.

ALL TRACTOMOTIVE EQUIPMENT IS SOLD AND SERVICED BY YOUR ALLIS-CHALMERS DEALER

TRACTO—
a sure sign
of modern design

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MORE ECONOMICAL BREAKAGE

WITH THE **"CAPE ANN"**

FORGED STEEL DROP BALL

HIGHLY EFFICIENT SECONDARY BREAKAGE MEANS—MORE TONNAGE—MORE PROFITS

The "Cape Ann" Forged Steel Drop Ball is noted for its long life and better wearing qualities for use in secondary breakage. It is "TOPS" in the drop ball field where constant pounding day in and day out make it absolutely necessary that ruggedness and dependability be the key factor to insure maximum production.

WRITE FOR PRICES AND INFORMATION

2000 TO 12000 LBS.

CAPE ANN ANCHOR & FORGE CO.

Post Office Box 361 Gloucester, Mass.

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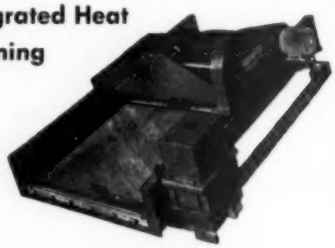
The Leahy® Screen with Integrated Heat Unmatched for Difficult Screening

When it comes to the screening of such difficult materials as lime, aglime and silica sand, there is none to match the efficiency of the new Model E Leahy screen. Integrated FlexElex® heating is engineered as an integral part of the screen to take full advantage of electrical and thermal potentials. The result is highest efficiency and lowest possible operating cost. Send for Bulletin 16-EH.



Made by the Original Deister Co. *Incorporated 1906*

The DEISTER CONCENTRATOR COMPANY, INC.

915 Glasgow Avenue Fort Wayne, Indiana

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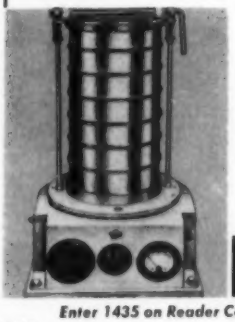
The NEW double action *SYNTRON* Vibrating TEST SIEVE SHAKERS



produce uniform, dependable analyses, faster

SYNTRON'S New Electromagnetic Test Sieve Shakers provide a thorough analyses in less time than with older fashioned machines. Utilizing both up-and down and rotating vibration, they produce a double vibrating action for faster testing.

SYNTRON Test Sieve Shakers produce quick, accurate analyses or accurately timed test periods. They are easy to operate and the absence of mechanical wearing parts assures dependability and low maintenance.

Write for free illustrated brochure

SYNTRON COMPANY

450 Lexington Avenue Homer City, Penna.

Enter 1435 on Reader Card

NEW LITERATURE

(Continued from page 156)

Portable bin unit

PIONEER ENGINEERING, Division of Poor & Co., Inc., has released a sales folder describing its new line of portable bin units. The basic unit stores 6 cu. yd. of material with extensions available to increase capacity to 8 or 10 cu. yd. The folder also contains complete specifications, photos and a drawing of the unit.

Enter 713 on Reader Card

Brushless generators

KATO ENGINEERING Co. has released Booklet ACG958, describing its new brushless ac. generators. The units are made with power ratings of from 5 to 400 kw. The firm says the new units permit higher efficiency and lower repair costs, because brushes, commutator and slip rings are eliminated, and explosion resistant properties, because the sparks occurring with brushes are eliminated.

Enter 714 on Reader Card

Belt conveyor idlers

LINK-BELT Co. is distributing Book 2716, a 40-page presentation of the 5 series and 23 types of belt conveyor idlers made by the firm. Available in belt widths ranging from 14 to 84 in., the idlers feature retainer clips which make removal of a roll easy and a "grease-through" design which permits lubrication of all rolls from a single fitting.

Enter 715 on Reader Card

Scrapers described

INTERNATIONAL HARVESTER Co. is releasing Catalog CR-733-H, describing its scrapers with 20 and 14-cu. yd. heaped capacities. The units feature fast, positive cable control, blade and bowl designed for "boiling" action of earth as it enters the bowl, roll-out ejection of earth from the bowl, and simple but efficient fuel pumps on the motors.

Enter 716 on Reader Card

Induction motor controls

ELECTRIC MACHINERY MFG. Co. is distributing Data Sheet 3300-PRD-249 on its line of NEMA Class E-2 squirrel cage induction motor controls. Safety is gained through fused motor protection and a new mechanical interlocking system.

Enter 717 on Reader Card

(Continued on page 161)

Enter 1436 on Reader Card

One of Mr. Janney's Macks leaving the phosphate mine with a load of ore. The haul road drops 2,000 feet in the five miles from the mine to the unloading site. The mine (operated by the Utah Construction Co.) is located near Garrison, Montana, at an elevation of 6,000 feet.

When it's a matter of profitable hauling . . .

The smart money rides on MACKS!

"Not only phosphate ore rides on our Macks—so do our profits," says Mr. W. P. Janney, of Garrison, Montana.

"Our Mack trucks constantly operate on excessively steep grades, during a working season limited to seven months per year because of snow. Yet they keep an on-time schedule, with little down time and low operating costs. That's why we're putting in an order for more Macks. When it comes to profitable hauling, we put our money on Macks!"

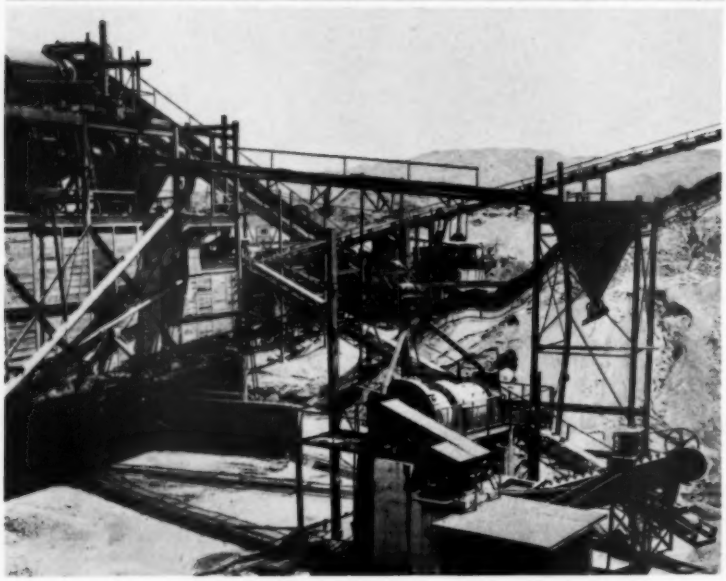
There's a good reason why hauling costs hit rock bottom when Mack trucks handle the job. Macks are quality-built from front bumper to rear axle; rugged major components —front and rear axles, frames, brakes, transmissions and engines—are built to the highest standards in the industry, in Mack's own factories . . . your assurance of trouble-free, economical operation, year after year.

Mack specializes in solving difficult hauling problems. Get in touch with your Mack branch or distributor, and ask to have a specialist in profitable hauling call on you—soon. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK
FIRST NAME FOR
TRUCKS

ECONOMIZE with built-in REOPCO*

Marcy Mills have a reputation for being the best built grinding mills available... that's why ***they cost less to own*** save you money every day for years.



5' x 10' Marcy Center Peripheral Discharge Rod Mill, by grinding a waste portion of the available material, enables company to meet rigid sand specifications. No replacement parts have been required in the first two years of operation... typical of Marcy's dependable, economical operation.

*Reduced operating costs.

Check Marcy Performance Records with our Engineers

Manufacturing Division

THE MINE AND SMELTER SUPPLY CO.

DENVER 16, 3800 RACE STREET | NEW YORK 17, 122 E. 42nd STREET | SALT LAKE CITY 1, 121 W. 2nd S. | EL PASO, P. O. BOX 1162

LICENSED MANUFACTURERS AND SALES AGENTS in Canada, Australia, Sweden, England, South Africa

SALES AGENTS in Peru, Chile, Philippine Islands, Japan, New York City (for Continental Europe) and in principal cities of the U.S.

Enter 1476 on Reader Card

NEW LITERATURE

(Continued from page 158)

Roller mills

BRADLEY PULVERIZER CO. has issued Catalog 63 describing its line of semi-fine and fine pulverizing roller mills. The screen-type units are commonly used to grind agricultural limestone, phosphate rock and cement rock, and to grind to a fineness of 100 percent passing 20 mesh. The firm's pneumatic mills, newer designs, come in three sizes, the largest of which grinds 15 tph. at 90 percent passing 100 mesh.

Enter 718 on Reader Card

Rear-dump hauler

EUCLID DIV., General Motors Corp., has issued a new catalog on its Model R-27 rear-dump off-highway truck. The unit features four-speed torqmatic drive, 27-ton load capacity, 325 or 335-hp. diesel engine, converter lockup and an oil retarder which automatically limits down-hill speeds and saves brakes.

Enter 719 on Reader Card

Safety hats

MINE SAFETY APPLIANCES CO. has issued Bulletin 0601-4 describing its safety helmets, which are high-pressure molded of laminated layers of reinforced plastic. Available in colors, the hats are designed to protect against all head hazards. They feature fixed-crown suspensions which insure adequate clearance between top of the hat and top of the wearer's head.

Enter 720 on Reader Card

Clutches, torque converters

TWIN DISC CLUTCH CO., in the latest issue of its "Production Road" magazine, commemorates its 40th anniversary with an article on the growth in importance of engine-powered machinery. The article and others in the issue describe applications of the firm's friction clutches, power take-offs, fluid couplings, torque converters and marine gears.

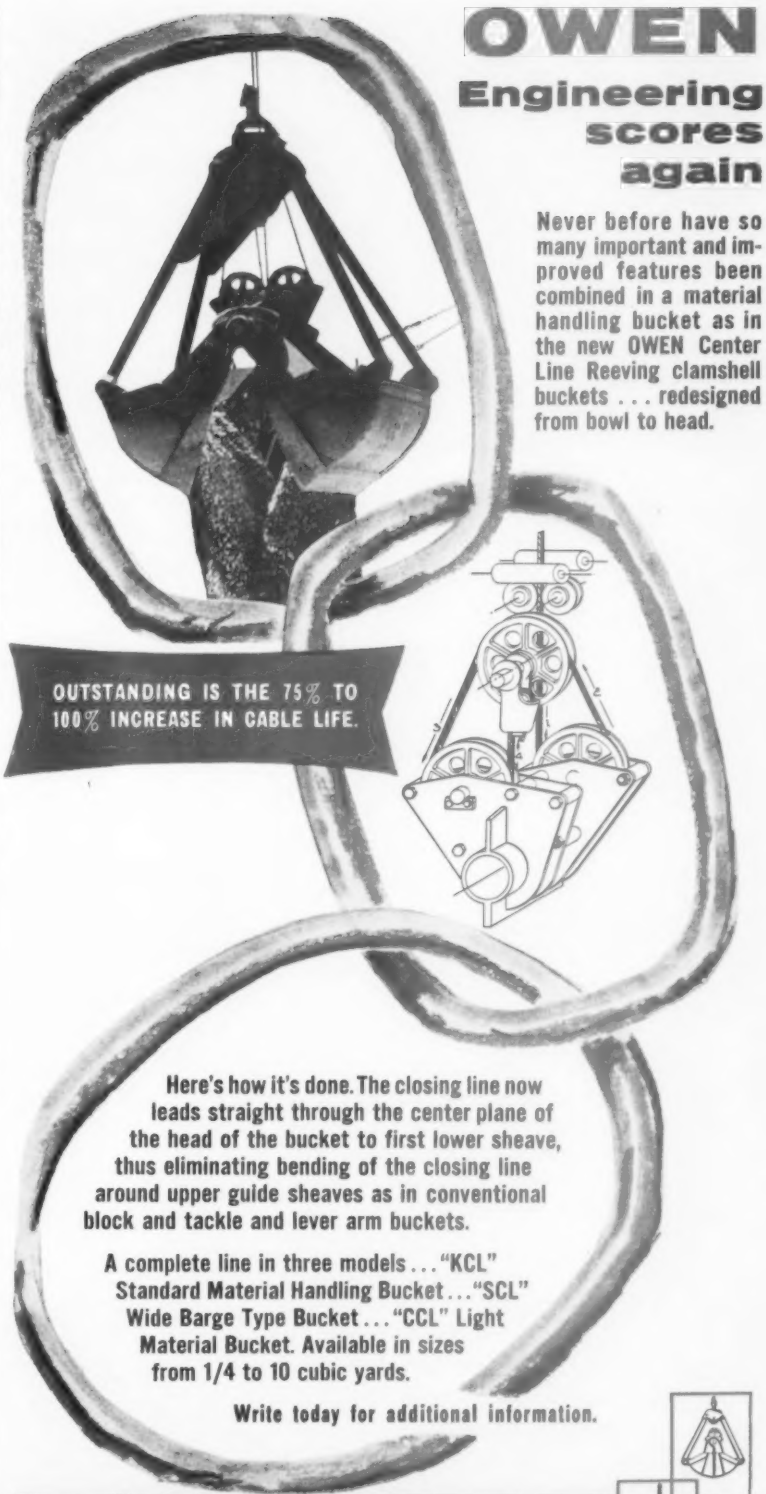
Enter 721 on Reader Card

Re-threading drill rods

ATLAS COPCO has published Folder E-434, showing how to machine new threads on the ends of its Sandvik Coromant drill extension rods. Worn-out threads are simply cut off and the new ones machined on the rod.

Enter 722 on Reader Card

(Continued on page 163)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Engineering scores again
Never before have so many important and improved features been combined in a material handling bucket as in the new OWEN Center Line Reeving clamshell buckets . . . redesigned from bowl to head.
OUTSTANDING IS THE 75% TO 100% INCREASE IN CABLE LIFE.
Here's how it's done. The closing line now leads straight through the center plane of the head of the bucket to first lower sheave, thus eliminating bending of the closing line around upper guide sheaves as in conventional block and tackle and lever arm buckets.
A complete line in three models . . . "KCL" Standard Material Handling Bucket . . . "SCL" Wide Barge Type Bucket . . . "CCL" Light Material Bucket. Available in sizes from 1/4 to 10 cubic yards.
Write today for additional information.
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Announcing

THE NEW BUCYRUS - ERIE

30-R

Here's a small sample of the big performance features the new Bucyrus-Erie 30-R rotary blast hole drill offers.

Big Capacity — Drills 6¼ to 7⅞-in. holes with rotary bits and down-the-hole tools.

Terrific Pull-Down — Hydraulic motor exerts a pull-down force of 30,000 pounds.

Infinite Selection of Speeds — Hydraulic rotary drive can be varied from 0 to 110 rpm.

Fully Self-Contained — With five lengths of pipe in its rack, the 30-R is always ready to move in and drill to a depth of 106 feet completely on its own.

Works Fast and Steady — Top drive permits continuous drilling for more than 21 feet before adding new pipe.

Always Solid, Always Level — The 30-R stands firmly on large, 20-in.-wide crawler treads . . . levels instantly with three big hydraulic jacks.

It's another OUTSTANDING B-E drill with the same rugged stamina . . . the same operating ease and servicing convenience that have made larger Bucyrus-Erie rotaries the most popular in the field — *by far*. The 30R may also be truck-mounted.

Write Dept. 2B59K, Bucyrus-Erie Company, Drill Division, Richmond, Indiana, for complete information on the new 30-R.

BUCYRUS ERIE®

Builds Better Equipment

NEW LITERATURE

(Continued from page 161)

Wire rope inspection

LESCHEN WIRE ROPE DIV., H. K. Porter Co., Inc., has issued Service Bulletin No. 104, showing how to increase service life of wire rope. How inspections should be made, how often and the value of regular inspection also are shown in the bulletin.

Enter 723 on Reader Card

Air compressors

LE ROI DIV., WESTINGHOUSE AIR BRAKE CO., has issued Bulletin SG-2, a four-color, 12-page booklet describing Westinghouse air compressors ranging in size from ½ to 15 hp., and from 80 to 250 psi. The compressors feature low oil-level protection and thermal overload protection.

Enter 724 on Reader Card

Truck carriers

THE MAXI CORP. has published specification bulletins on four Maxi truck carrier models: T-64-F for 35-ton capacity cranes; T-84-F, 35-ton; T-84-G for 40-ton; T-84-H, 45-ton. All of these trucks are designed so that the rated capacity of the upper works may be handled at a practical 15-ft. radius.

Enter 725 on Reader Card

Crane application

CLEVELAND TRAMRAIL DIV., The Cleveland Crane & Engineering Co., has issued Booklet No. 2008-N, giving detailed studies of track design, peening and stresses. Various types of carriers, cranes, tractors, track switches, buckets, grabs and electrification are covered and photographs illustrating a wide variety of overhead materials-handling installations are included.

Enter 726 on Reader Card

Cableway excavators

SAUERMAN BROS., INC., has issued Bulletin TC-1 on its new torque-converter-equipped slackline cableway excavators, units which are said to dig and haul free-caving material from pit to stockpile for 8 cents per cubic yard. The fluid drive of the excavators' new torque-converter diesel powerplants cushions out shock loads and reduces maintenance and cable costs. One reason for the low operating costs of the units, which can supply 200-tph. and larger sand and gravel plants, is one-man operation. **END**

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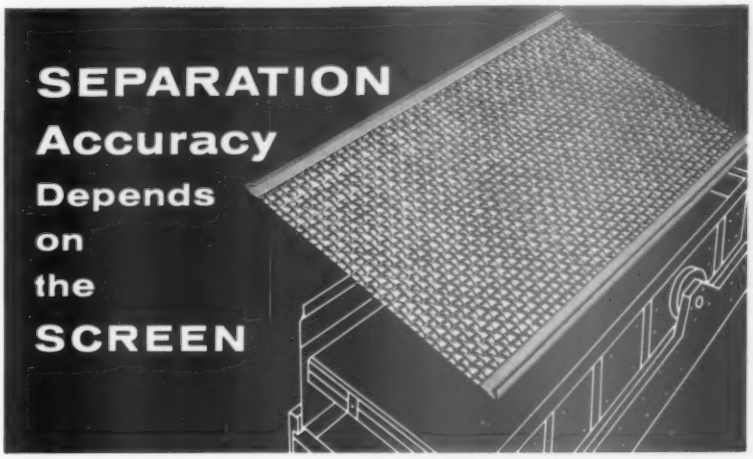

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Step-up Storage efficiency, cut Materials losses with Marietta concrete silos

For cement storage

A Marietta concrete silo system saves you time, money and labor. Any type of mechanical or pneumatic conveyor or filling and discharge method can be used with these silos. Whatever system you choose can be mounted directly, safely on the roof or side wall of a sturdy Marietta silo.

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NEW U. S. PATENTS

By OLIVER S. NORTH

Aggregates

2,865,503—Construction of an improved **sand** washing and grading apparatus that is low in cost and economical of maintenance. The machine is built of a number of standard units which may be operated together according to capacity desired and the number of size fractions demanded. (to E. P. Thamme).

2,866,759—A composition for clarifying, softening and decolorizing water comprises about 50 percent pulverized **limestone,** 30 percent aluminum sulfate, 10 percent sodium hydroxide, and 10 percent sodium aluminate. (to O. Bacon, W. C. Horton).

2,868,735 — Process for purifying and concentrating **vermiculite** ore. An aqueous suspension of mine-run ore is agitated on a jig to partially delaminate the particles. The flakes are concentrated in the upper portion of the bed of material by the oscillation of the jig, and the vermiculite fraction is continuously separated from the gangue fraction by use of a horizontal splitter. The jigging is repeated for further delamination and the production of a higher purity product. The vermiculite fractions are dried and are then ready for the market. (to J. B. Myers. Assigned to Zonolite Co.).

2,869,191 and 2,869,196—Use of phenolic resin, sodium carbonate, powdered **blast-furnace slag** and **silica sand** in a refractory ring for supporting hot tops on vessels containing molten metals (to R. H. Cooper and G. M. Corbett. Assigned to The Dow Chemical Co.).

Cement

2,866,272—A heat exchange apparatus is described for the preheating of **portland cement** raw mixtures or the like. The apparatus includes a plurality of cyclone separators arranged more or less horizontally, so that no very high over-all installation is necessary. (to S. Pedersen. Assigned to F. L. Smidth & Co.).

2,866,625—A heat exchange apparatus particularly adapted to **portland cement** manufacture processes, such as drying and preheating raw material mixtures and calcining and cooling clinker. In this apparatus, travel of the particles through the gas stream is intermittently interrupted, thereby prolonging gas-particle contact and enabling accomplishment of complete heat exchange in a single stage. (to K. J. Sylvest. Assigned to F. L. Smidth & Co.).

2,868,659 — The plasticity and strength of cement mixes are improved by adding, to either the dry **portland cement** or to the cement slurry, commercial waste sulfite liquor which has been treated previously with activated carbon. (to E. W. Scripture, Jr., S. W. Benedict and P. B. Jacox. Assigned to American-Marietta Co.).

2,871,133—In a method for treating recovered **portland cement** kiln dust to permit its use in the manufacture of cement, the dust is agglomerated with water or fuel oil, heated to at least 1,000 deg. F. in an oven to increase the solubility of the alkalies present and leached with water to dissolve the water-soluble components. The solids are then recovered, and charged to the kiln along with other raw materials (to C. V. Palonen and E. W. Kaiser. Assigned to Peerless Cement Co.).

Mica

2,870,277—In the manufacture of an embedded electric element, the piece is placed between two sheets made of uncured reconstituted **mica,** and the assembly heated and cured. The process of making mica sheet is briefly but clearly described (to L. J. Carter. Assigned to Farnam Mfg. Co.).

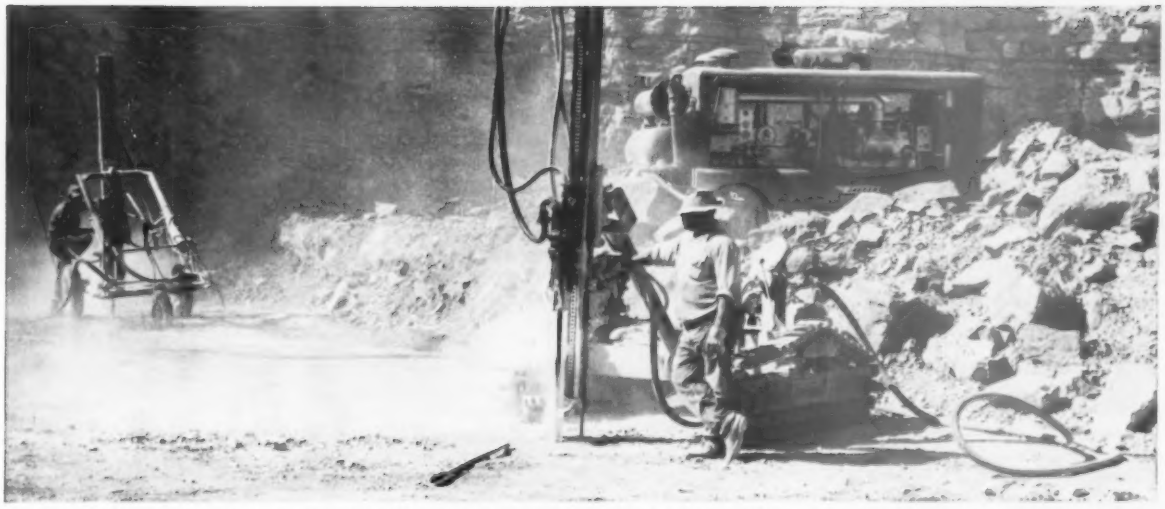
2,870,819—Method and apparatus for recovering and using the finer, thinner, smaller **mica** flakes, which usually are wasted, in the manufacture of integrated mica sheet (to M. D. Heyman).

Whiting

2,865,781—Process for producing extremely finely divided **whiting.** A small amount of silica or an alkali metal silicate is incorporated into the limestone melt, and the whiting precipitated from the melt by quenching. (to E. Wainer. Assigned to The Sinclair Mfg. Co.).

(Continued on page 166)

*Copies of United States patents are available at a cost of 25 cents each from The Commissioner of Patents, Washington 25, D.C. For convenience, coupons, each good for one copy of any patent, may be purchased from that official at the rate of $5.00 per 20-coupon pad or $25.00 per 100-coupon pad.



11" PER MINUTE PER DRILL, IN LIMESTONE LEDGE: Constant full pressure produces maximum footage with this Thor self-propelled "Rocket" rig and BW-2 wagon drill. "Our Jaeger '600' rpm's less, and its 100 psi easily operates the two drills without lag," says owner.

UP TO 140 LICKS A MINUTE with Jaeger "600" behind a McKiernan-Terry 9B-3 four-ton double acting hammer. The operation is setting piles and steel for cofferdams on reinforced concrete bridge project.

ON PIPE TUNNELING WORK, auger deflection caused by fluctuating air pressure formerly necessitated 2 to 3 drillings per hole. With the constant pressure of a Jaeger rotary, one drilling is now enough.

"Our air costs less than ever with a Jaeger"

Owners of Jaeger rotary compressors uniformly note their lower cost of operation compared with other makes. In 8 hours' steady operation a Jaeger "600", for example, averages 48,000 fewer revolutions than any of five other compressors which use the same GM 6-71 diesel engine (1700 rpm full load speed compared with 1800 rpm). Output exceeds 500 cu. ft. of air per pound of diesel fuel.

SLOWER SPEED MEANS SAVINGS

Jaeger 85, 125, 250 and 365 cfm models are similarly efficient. The fuel savings are substantial. Because all operation is below the continuous horsepower curve, engine maintenance is at a minimum. In the compressor unit, 8000 hours without replacing a single vane is not at all unusual.

Enjoy this low cost, trouble-free operation on your own work. We will be glad to provide full details and demonstration, or send latest Catalog.

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Ball Mill Liners • Screen Plates
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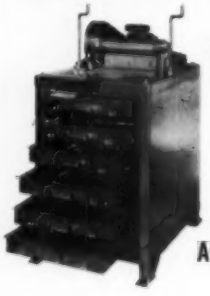
GILSON
TESTING
SCREEN



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CRUSHED
STONE,
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AGGREGATES

Makes 2 to 7 separations simultaneously in five minutes or less. Size range: 4-in. to 200-mesh. Sand attachment optional for handling 8-in. sieves.

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MALINTA, OHIO

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NEW U. S. PATENTS

(Continued from page 164)

Phosphate rock

2,865,710—Defluorination of **phosphate rock** by quick fusion therewith of a fluorine-containing superphosphate at 1,200-1,400 deg. C., and then removing and immediately quenching a portion of the fusion mass. (to I. M. Le Baron. Assigned to International Minerals & Chemical Corp.).

2,865,711 — Method of treating H_2SO_4-**phosphate rock** reaction den gases to recover the fluorides as a fluorine-containing ammonium composition and subsequently treating the latter to make hydrogen fluoride. (to G. H. Gloss and D. H. Reeve. Assigned to International Minerals & Chemical Corp.).

2,865,713 — Process for making phosphoric acid from high-grade crushed **phosphate rock,** which is coated with a liquid petroleum asphalt. A highly reactive aggregate of coke and phosphate rock is formed. (to O. L. Culberson and W. A. Pardee. Assigned to Gulf Research & Development Co.).

Fluorspar

2,865,798—A free-flowing flux composition for use in arc welding consists of pyrolusite, **fluorspar,** silica and sodium potassium borosilicate. (to H. Hindson. Assigned to Fusarc Ltd.).

2,868,681—An electric arc welding composition consists of 40-45 percent CaO, 45-55 percent Al_2O_3, and 2-15 percent **fluorspar.** (to A. E. Shrubsall and C. E. Jackson. Assigned to Union Carbide Corp.).

Mineral wool

2,869,175—Novel construction and contour for a steam ring for the fiberization of molten material to produce **mineral wool.** Production rate is increased, the percentage recovery of finished product is improved and operational problems are reduced (to J. A. Ebbinghouse. Assigned to American Rock Wool Corp.).

2,869,296—Design for a two-stage machine for bagging **mineral wool** under compression (to E. R. Overman).

2,871,977—Use of **mineral wool** and powdered **soapstone** in a filter element used for removing fine particulate matter from industrial plant gases, such as open-hearth stack gases (to F. E. Kling).

(Continued on page 169)

Wake Up and Read!

Everywhere, every hour, something new... something that interests and often affects you ... is happening.

Our Constitution protects your *right* to know. Citizenship in a democracy means it's your *job* to know. As George Washington said, "*... it is essential that public opinion should be enlightened.*"

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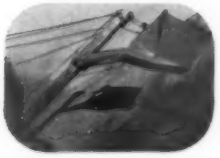
NATIONAL LIBRARY WEEK

APRIL 12-18, 1959

new McCaffrey all cable shovel loader

loads, swings, and dumps without travel . . . requires no special hydraulic equipment

McCaffrey's versatile new loader can be adapted to fit any ¾ yard or similar crawler or pneumatic tire machine. It is designed and engineered for fast cycle time, maximum economy of motion and unusually low maintenance. Also available in comparably larger sizes for larger machines.



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"OPERATION EFFICIENCY" Coast-to-Coast, profit-minded producers are revaluating their methods and their equipment with the objective of offsetting rising costs through more efficient operation. How about you, Mr. Producer? Since vibrating screens are the heart of your preparation plant, you simply can't afford to operate with obsolete or unsatisfactory equipment. And when you're buying NEW screens, we believe it will pay you to get SECO screens on your job. Check every one of the five solid reasons discussed below. Here is straight line thinking to help you put your own OPERATION EFFICIENCY to work for you . . . and increase your profits.

OVER 500 MODELS ASSURES THE RIGHT SCREEN FOR YOUR JOB

There's no such thing as a "nearly right" SECO vibrating screen. Whether you're making one size or ten of fine, medium or heavy materials SECO has the exactly right screen or screens for you. Over 500 models in single, double, triple and ½ deck variations with 4-bearing or 2-bearing construction.

ENGINEERED STAMINA FOR VOLUME AND LONG LIFE

For over a quarter of a century, SECO has specialized in the design and manufacture of vibrating screens exclusively. This specialization means better design, more rugged construction and longer life for SECO users. The first SECO screen ever built is still in service.

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Pictured here is the SECO parts department. From here highest quality genuine standard factory parts orders are rushed by the fastest means possible the same day they are received. This is another example of SECO'S continuing desire to help you get the most from your screens . . . with minimum down-time.

CLEAR CONCISE ILLUSTRATED MAINTENANCE MANUALS

With your SECO screen or screens you get an Owner's Maintenance Manual that covers every phase of proper maintenance to help you get maximum performance. These manuals contain concise descriptions and clear drawings. Parts diagrams are included, too, and all parts are numbered for easy ordering.

CLOSE ATTENTION TO YOUR SPECIFIC REQUIREMENTS . . .

At SECO your screening problems get individual attention. Our whole desire is to help you to trouble-free PROFITABLE screening.

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SCREEN EQUIPMENT CO., INC.

Buffalo 25, New York

SECO

VIBRATING SCREENS

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NEW U. S. PATENTS

(Continued from page 166)

Gypsum

2,865,905—A high quality retarder for **gypsum** plaster is made by hydrolyzing under pressure a slurry of hoof meal or other keratin, **lime** and water. (to R. R. Teale. Assigned to National Gypsum Co.).

2,868,660—An improved quick-drying interior finish plaster comprises about 60 percent ground **marble** aggregate, 27 percent hydrated **lime,** 12 percent **Keene's cement,** and very small percentages of zinc stearate and a pigment. Such a plaster finishes hard, wears well and is already colored and therefore does not need painting. (to E. M. Lemmon. Assigned to James L. Palsgrove).

Wollastonite

2,871,134—Method for making a gypsum-based wallboard. The core comprises a uniform admixture of **gypsum, mineral wool** fiber, and 20- to 200-mesh **wollastonite.** Inclusion of the wollastonite improves resistance of the board to fire by delaying calcination of gypsum content when the board is exposed to flame (to C. J. Loechl. Assigned to The Celotex Corporation).

2,873,181—Manufacture of coated abrasive products, e.g., sandpaper, in which pulverized **wollastonite** is employed as the filler instead of $CaCO_3$. The wollastonite is dispersed throughout a liquid adhesive, and incorporated in either the making coat or the sandsizing coat, or both. The product sandpaper can be more readily flexed without causing separation of the abrasive layer from the backing material (to C. M. Hanford. Assigned to The Carborundum Co.).

Miscellaneous

2,871,132 — A glazing composition for application to clay building brick and other structural clay products comprises approximately 25 percent **flint,** 3.6 percent **kaolin,** 3.6 percent **talc,** 22.6 percent barium carbonate, 5-25 percent **nepheline syenite,** 5-30 percent **colemanite** and 5-20 percent **lepidolite.** If a colored glaze is desired, 4-15 percent of a coloring pigment is added to the composition. A smooth, glossy, non-crazing, non-pinholing glaze may be formed on clay products using this mixture (to F. A. Hummel. Assigned to Glen-Gery Shale Brick Corporation). **END**

which egg is good?

which is bad?

From outer appearances you can't tell whether an egg is good or bad. The same applies to steel.

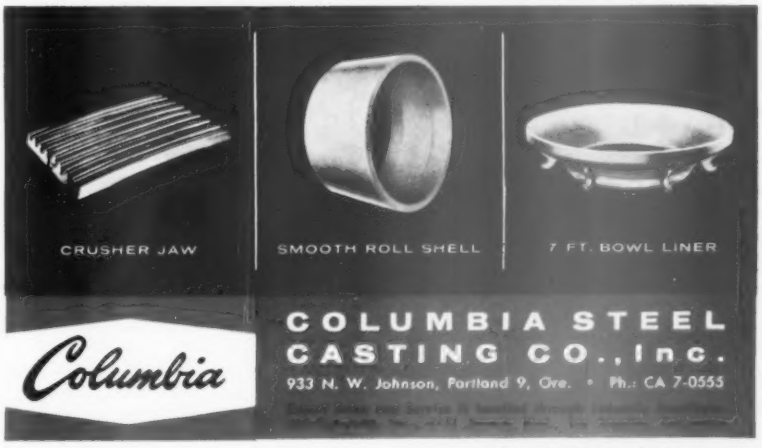
Replacement parts made by different manufacturers can look almost identical. Yet, the product of one will outwear competitive products by a substantial margin.

Because this is true, we invite you to COMPARE Columbia Armor-Tough crusher parts, under actual working conditions, with those you are now using.

Columbia leads the field in providing *more* wear where it counts, where rock meets metal. Columbia provides a full line of rugged crusher replacement parts, with most parts stock-piled for rapid shipment.

Once you make the acid test of service, once you COMPARE . . . you, too, will become a customer of Columbia Steel Casting Company.

Send for the new illustrated Columbia Bulletin No. 1063, featuring crusher, tractor, shovel, bucket replacement parts.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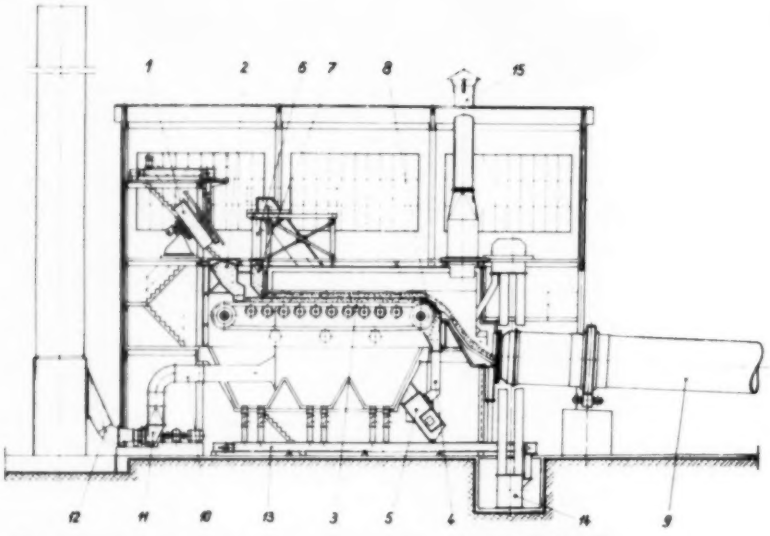
NEW MACHINERY



Grate preheater cuts cement-making fuel bills

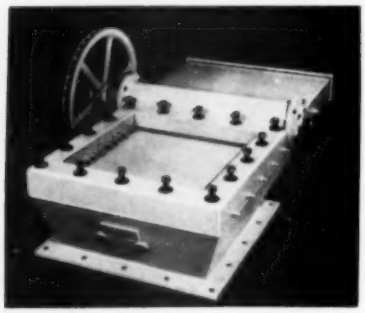
AN UNUSUAL grate preheater is a top feature in rotary-kiln cement plants made by a German firm. The system is said to cut kiln fuel consumption to 600,000 Btu. or less per barrel.

As shown in the drawing, kiln feed is nodulized or pelletized in the nodulizer (1). It then falls to a feed hopper (2) and is drawn out onto the traveling grate (3). The 1,800 to 2,000 deg. F. kiln gases reach the material from above. The kiln feed is again drawn onto the same grate as a top layer of material. The fully preheated feed, once it reaches the end of the grate again, is peeled off the top of the first-pass material by an adjustable knife, then sent to the kiln.

By having two layers exposed to the hot exhaust gases, the designer accomplishes several things: The lower layer is moist and acts as a dust filter. Second, little room is needed, since both passes are on the same grate. The second pass of material assures that the nodules are turned and means more efficient heat exchange and lower draft resistance. *MIAG Northamerica, Inc., 1616 S. Eighth St., Minneapolis 4, Minn.*

Enter 300 on Reader Card

Shut-off gates available in seven sizes



DUST-TIGHT, SELF-CLEANING double rack and pinion shut-off gates that are said to provide trouble-free operation with sand, gravel, stone and other materials in the rock products industry have recently been developed.

An outstanding feature is the design of the gate plate which is renewable in the field without replacing racks. Standard features for the 7 sizes between 12 and 30-in. gates include: Deep U-section gate plate assembly; open-tooth, corrosion-resistant aluminum alloy racks; self-cleaning cast iron pinions located above racks; lapped seal on all four sides of gate plate; cast aluminum gasketed access doors; ⅜-in. steel plate body with ¾-in.-thick flanges; external grease fittings for all rollers and bearings; relief chamber for displaced material when closing through standing column; handwheel, chainwheel, ratchet, cylinder or motor operation; stud or flange top with any combination of round or square top and bottom openings.

Optional features that can be obtained, according to the manufacturer, include: Stainless steel, stainless lined corrosion resistant steel or aluminum bodies, and many other accessories for special applications. *Beaumont Birch Co., 1505 Race St., Philadelphia 2, Pa.*

Enter 301 on Reader Card

Riprap bucket

A MAKER OF materials-handling buckets announces the addition of three new models to its product line, including a riprap bucket for the rock products industry. This new "orange peel" riprap bucket is built in sizes from ½ to 2 cu. yd.

The field-tested riprap bucket is designed to pick up and place piles of stone easily, and is adapted specially for unloading gondola cars. The ½-cu. yd. bucket weighs approximately 2,000 lb., and the 2-cu. yd. bucket weighs approximately 12,000 lb. *Yaun Mfg. Co., Baton Rouge, La.*

Enter 302 on Reader Card

(Continued on page 172)

29,000 lbs. - and all muscle!

Bring on those gruelling, earth-moving, profit-making jobs and just watch this mighty Dodge D800 dump truck clean them up.

It weighs in at 29,000 lbs. maximum G.V.W. It's big and tough. It's packed with power and the right equipment to get the job done in short order. Special transmission, if you need it—special axle, springs, brakes—whatever your kind of trucking requires.

Big-load hauling was never easier . . . never more profitable . . . than in new, improved '59 Dodge "Job-Rated" heavy-duty trucks with G.V.W.'s to 49,000 lbs., G.C.W.'s to 65,000 lbs.

Your Dodge dealer has full information. He'd like nothing better than to talk to you, and tell you why . . .

today,
it's real smart
to choose Dodge
Trucks

To provide maximum flexibility in loaded, off-road service and at unloaded highway speeds, a 4-speed auxiliary transmission is now offered for all conventional and tandem models in the Dodge 800 and 900 series. Another benefit for more truck buyers!

Enter 1479 on Reader Card

NEW MACHINERY

(Continued from page 170)

Truck transmission

A HEAVY-DUTY semi-automatic transmission designed specifically for big earthmoving and construction equipment has been announced.

Designated the R-1160, the new model is engineered for tractors and trucks equipped with engines of up to 1,160-cu. in. piston displacement, and is designed to handle up to 800 lb.-ft. of engine torque.

Featuring nine forward ratios, the new transmission is built to give fast work cycles, low fuel consumption, longer engine life, reduced road maintenance and lowered operator fatigue. It offers quick, easy shifts. There is no gear splitting. One shift lever controls all nine forward and two reverse speeds; range shifts are preselected, automatic and synchronized. With less shifting, driver fatigue is reduced, and the choice of nine selective ratios enables engines to work in their peak horsepower and torque range with greater fuel economy, according to the manufacturer. *Fuller Mfg. Co., Kalamazoo, Mich.*

Enter 303 on Reader Card

New portable primary crusher line is marketed

THE FIRST of a new series of portable primary crushing units has been brought out. Designated the 151PR, the unit has a 2036 overhead eccentric jaw crusher and a 3 x 8-ft. apron-type feeder. A wide delivery conveyor, 19 ft. long, completes the components. All are mounted on a semi-trailer type chassis. The crusher itself is installed at an angle that directs the material into the crushing chamber along the natural lines of flow from the feeder. This aids the forced-feed action, relieves the bridging and reduces void spots in the crusher, thus increasing production. *Pioneer Engineering, Division of Poor & Co., Minneapolis, Minnesota.*

Enter 305 on Reader Card

Tractors said to have 20 percent higher output

TESTS CONDUCTED by the maker show that the new series H D8 crawler tractors will do 20 percent more work than their F D8 predecessors. The gains are due to about 4,000 lb. more weight, about 20 percent more power and 20 percent higher speed. The units are equipped with either direct drive or torque converter.

Flywheel horsepower of the new units has been increased to 225 from 191, an 18 percent boost. The gain is due largely to the addition of a turbocharger to the engine. The H D8s have the most ground clearance in their size class, 20 in. For good flotation on soft ground, 28-in. track shoes are now available for the 23-ton tractors, whereas 26-in. shoes were the widest available previously. Another improvement is pressure lubrication of the entire power train.

New track rollers, carrier rollers and idlers set an industry precedent, for after lubrication at the factory they require no further attention until rebuilt. Completely new face-type metal floating-ring seals and rubber rings are the features which make the change possible. *Caterpillar Tractor Co., Peoria, Ill.*

Enter 304 on Reader Card

Explosives bag

THE DEVELOPMENT OF a new explosives bag for packaging explosives has been announced. The bag, 4 in. diam. and larger, is constructed of multi-ply creped kraft paper outer tube and a specially-extruded pinhole-free seamless polyethylene liner.

The poly liner is identified by a longitudinal red stripe running the length of the film. It can be safely heat-sealed through the outer ply to provide a perfect waterproof closure. The outer paper provides the necessary strength to resist breakage when dropped into blast holes. The new explosives bags have been submerged in wet holes for as long as seven days without leakage. They are recommended where moisture creates a problem in blasting operations.

Heat-sealable and waterproof, the new explosives bag is resistant to oil and can be used for ammonium nitrate-fuel oil mixtures. *Bemis Bro. Bag Co., 408 Pine St., St. Louis 2, Mo.*

Enter 306 on Reader Card

(Continued on page 174)

FOR A SUPERIOR AGRICULTURAL LIMESTONE PRODUCT ... IN ONE LOW COST OPERATION

Whether the mesh is 10 or 20, Bradley Hercules Mills reduce limestone to a uniform fineness in a single operation without additional screening . . . . . produce finished material containing a large percentage of 60, 100 and 200 mesh. And Bradley Hercules Mills also eliminate manual operation through an electrical feed control. Their rugged construction . . . dustless operation . . . easy accessibility to grinding parts keep maintenance costs at an absolute minimum . . . provide maximum service, 7 days a week. In sizes to meet any plant's requirements for a superior grade of agricultural limestone . . . at moderate cost.

See Chemical Engineering Catalog or for complete information, write for Catalog No. 63

BRADLEY PULVERIZER CO.
superior grinding equipment since 1891

LONDON ALLENTOWN, PA. BOSTON

Enter 1498 on Reader Card

NEW MACHINERY

(Continued from page 172)

Dustless hand drill

DUSTY DRILLING conditions, a problem in quarries near populous areas, are now eliminated with a new dry, dustless drill known as the LHV45. The LHV45 provides improved working conditions for drilling operators, allows drilling near machinery where dust damage can be costly and eliminates dusty drilling conditions. Steel sticking is practically eliminated, because cuttings are collected as drilling progresses.

The drill is of medium weight, 56 lb., and has a 1 in. hex x 4¼ in. chuck. Length is 25½ in. The drill and dust collector tank operate at 80 to 90 psi. Air supply connection is ¾-in. pipe, for use with ¾-in. air supply hose, and the dust collector hose is 1 in. The equipment has Bureau of Mines approval BM 2531. *Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.*

Enter 307 on Reader Card

Portable generator

A PORTABLE GENERATOR is now in production which will provide 1,500-w., 115-v. single-phase ac. emergency power. The new unit weighs only 89 lb. and includes standard equipment of recoil starting, inherent voltage control, 3½-cycle maximum frequency variation and a four-cycle gasoline engine.

The unit is small enough to be carried in a car or pickup truck and is of die-cast aluminum alloy construction. Outstanding feature of the generator, according to the manufacturer, is an idling speed control governed by the load requirements of the equipment in operation. Normal operating speed at 60 w. or greater is about 3,600 rpm. The no-load speed of the unit is 1,800 rpm.—half speed—conserving fuel and reducing wear on engine and generator. *Wincharger Corp., Sioux City 2, Iowa.*

Enter 308 on Reader Card

Crane-excavators have big capacities for size

A COMPLETELY redesigned line of ⅜-cu. yd. crane excavators has been introduced. Major changes in the basic "350" unit include a new turntable with combination hook and trunnion roller setup. It has fewer parts and means more equal load distribution to cope with the units' higher capacities. Continental F-209 gasoline engines are used as standard power units in the new "350," boosting their horsepower by 14 percent.

The Model T-350 carrier-mounted unit has 11-ton lift capacity. As a shovel, the T-350 will handle 115 cu. yd. per hour out of stockpile with the new ⅝-cu. yd. rehandling bucket or with a dragline.

Equipped as a shovel, dragline or clamshell, the Model C-350 crawler will move 100-cu. yd. per hour from a stockpile.

A large lifting capacity for the ⅜-cu. yd. self-propelled field—a full 11 tons—highlights the Model CR-350 self-propelled wheeled unit. *Schield Bantam Co., Waverly, Iowa.*

Enter 309 on Reader Card

New screen design eliminates blinding

A TAPERED-SLOT SCREEN especially designed to eliminate blinding when screening large amounts of "near-opening" size materials has been announced. This latest addition to the line of screens will be known and marketed as the Taper-Slot.

Basic screen construction consists of a series of wedge-shaped wires looped at regular intervals around a cross-rod positioned at right angles to the wires. Normal distance between loops is 2¾ in. In the new screen, the opening between the wires gradually increases in width between loops. The opening between two wires, from loop to loop, may taper from .016 to .024 in., and this combination of opening sizes would be the same between each wire and loop throughout the entire screen. All tapers or combinations of opening sizes will be custom manufactured for specific applications. The new screen can be easily interchanged with other types of this manufacturer's screens.

According to the manufacturer, this new design enables materials that would normally lodge between the wires to be carried with the flow of material, to the larger end of the tapered slot. At this point the material

either passes thru the screen or becomes loose and continues on with the material flow. In addition, the tip created by the "loop" construction will cause the material not falling through the screen to be cleared to pass on to the next section of wire. This is said to increase screening efficiency by eliminating unnecessary pile up. *Wedge-Wire Corp., Wellington, Ohio.*

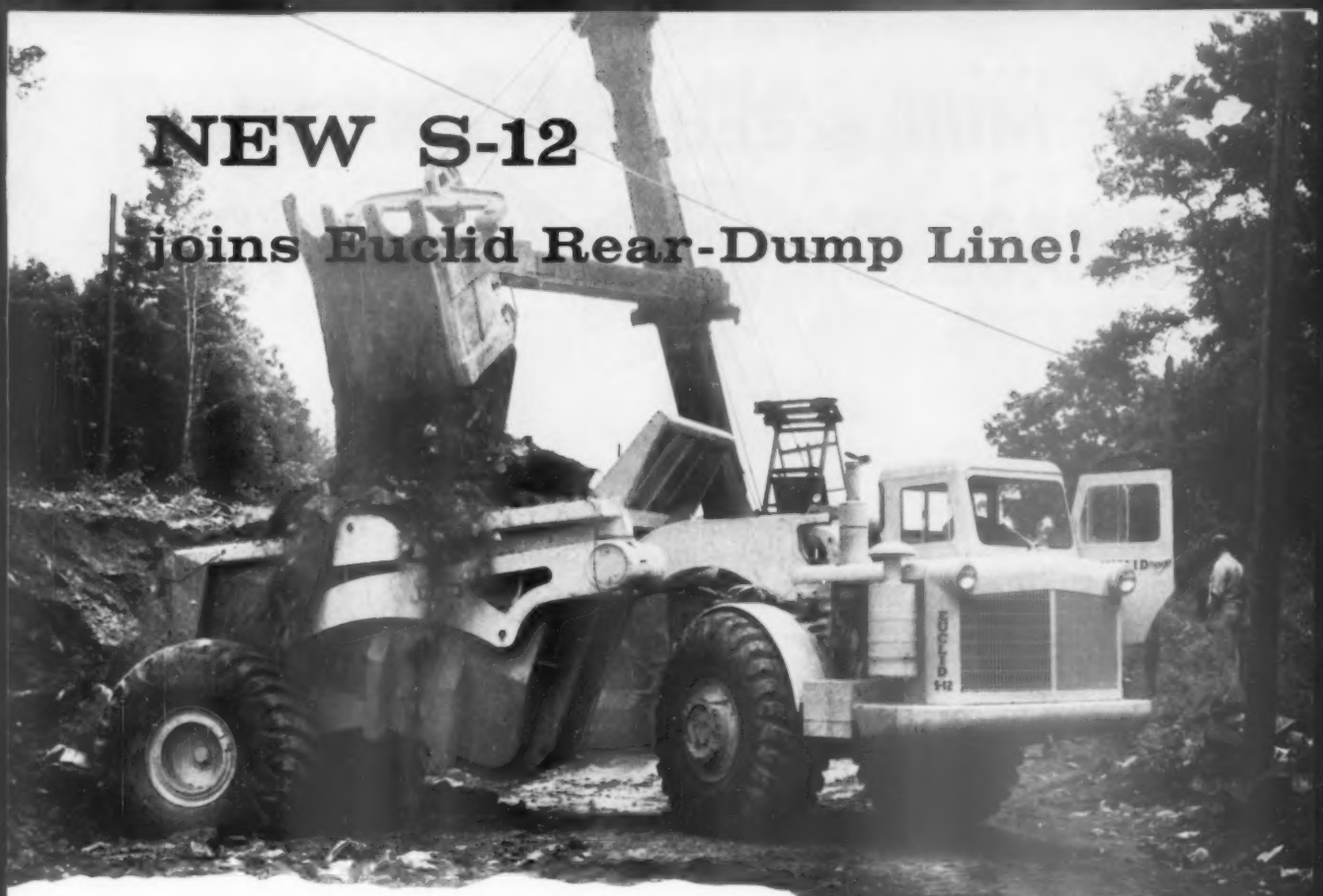
Enter 310 on Reader Card

(Continued on page 182)

Enter 1414 on Reader Card

NEW S-12

joins Euclid Rear-Dump Line!



The Model S-12 Euclid-Easton hauler—with payload capacity of 44,000 lbs.—is a new size Euclid over-hung engine type semi-trailer rear-dump. Designed and built as a complete, balanced unit, it combines the experience of two leading manufacturers of hauling equipment for mines, quarries and heavy industrial and construction work.

With 218 h.p. and 5-speed gear transmission the S-12 has a fast travel speed and ample power for the toughest jobs. Big 24.00 x 25 tires on all wheels provide traction and flotation for operation under conditions that would stop other haulers. For work in close quarters the 90° hydraulic steering and variable wheel base gives the unit exceptional maneuverability and helps cut cycle time.

Well reinforced body is constructed of special alloy steel to withstand the impacts of shovel-loaded rock and heavy excavation. Single stage double-acting hoists raise the body quickly, with smooth positive control all during the dumping cycle.

Have your Euclid dealer show you how this Model S-12, or the 12 and 35 ton semi-trailer models with 143 and 325 h.p., can cut hauling costs. He'll be glad to tell you about other Rear-Dump "Eucs" of 10 to 50 ton capacity, too.

EUCLID Division of General Motors Corp., Cleveland 17, Ohio

22-ton capacity
14 yds. struck
218 h.p.
24.00 x 25 tires
22.6 mph top speed

Euclid semi-trailer rear-dumps are available in 3 capacities—12, 22 and 35 tons with 143, 218 and 325 h.p. Tractors for these models are interchangeable on 7, 12 and 21 yd. scrapers.

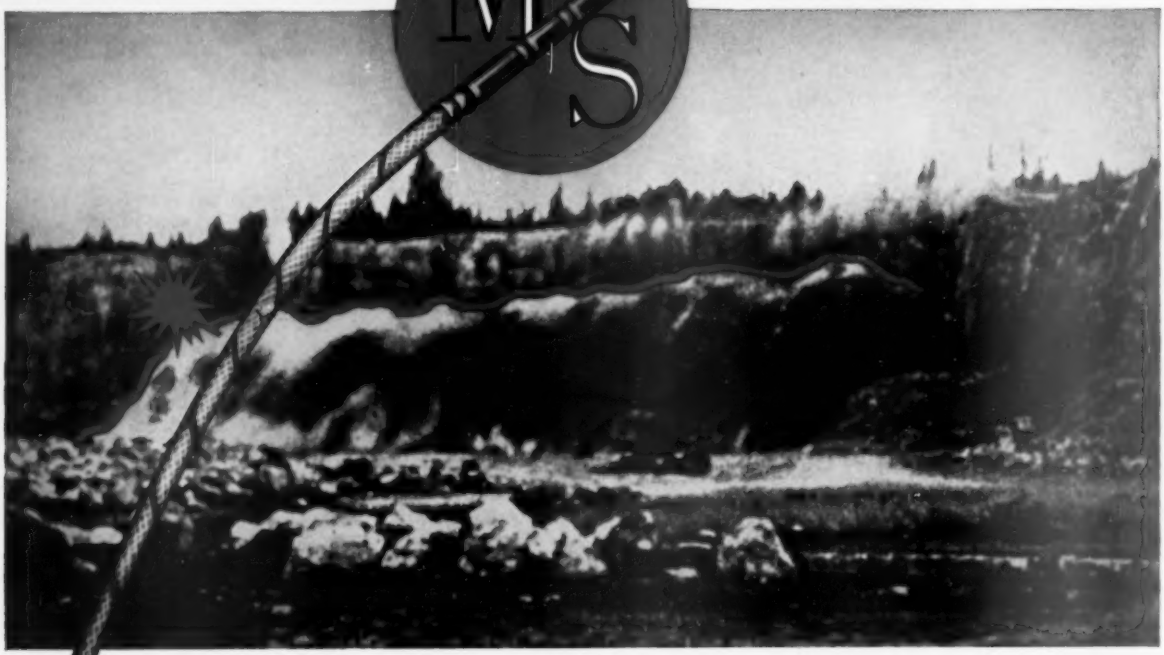
GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

For Millisecond Delay Blasting

PRIMACORD® MS CONNECTORS*



are now available in three periods: 5, 9 and 17 MS

A Primacord MS Connector consists of a metal tube 2¾ inches long, containing an element that produces a delay measured in 5, 9 or 17 MS. A foot of Primacord is crimped in each end of the tube. The Primacord trunk line is cut between holes and the MS Connector joined to each of the two ends with a tight square knot, or lapped with pressure-sensitive tape. Packed 50 to a cardboard tube, 500 to a case.

16 mm movie film from which this enlargement was made.

This unretouched photograph was enlarged from a 16 mm frame. It shows a multiple hole blast detonated with Primacord, and hooked up with Primacord MS Connectors in the trunk line. Note the steady progress of this blast from the point of initiation at the left, as indicated by the red line.

Millisecond detonation of Primacord down lines in medium size holes offers many advantages in multiple hole blasting. Millisecond delay relieves burden, results in improved fragmentation. Less explosive may be required than for comparable instantaneous blasting. Decreased vibration and concussion, controlled throw and reduction of bootlegs are other advantages.

Under certain conditions the danger of cut-off holes can be minimized when Primacord MS Connectors are used on the order of 5, 9 or 17 milliseconds. In any event, the presence of unexploded powder in the muck is less hazardous when Primacord is the detonating agent. It cannot be set off by stray electrical currents, sparks, or ordinary shock, but must be detonated with fuse and cap or electric blasting cap.

For more information see your explosives supplier or write to

*Manufactured by E. I. duPont de Nemours & Company. Available through explosives suppliers

MS-1

THE ENSIGN-BICKFORD COMPANY

Simsbury, Connecticut • Since 1836

Safety Fuse, Primacord® and Detacord® Detonating Fuse, Ignitacord®, Quarrycord®, Pyrotechnical Devices and Blasting Accessories

Enter 1480 on Reader Card

MONEY MAKING IDEAS FOR YOU - - - FREE

USE THESE CARDS FOR MORE INFORMATION ON:

1. **Advertised Products**
2. **New Machinery**
3. **New Literature**

How to use:

Each advertisement in this issue is provided with a key number, so is each new machinery and new literature item. For more information on any of these items simply fill in the key numbers in the appropriate space on the adjoining card and send it to us. We'll do the rest.

BUSINESS REPLY CARD
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PERMIT NO. 1417
CHICAGO, ILL.

– POSTAGE WILL BE PAID BY –

ROCK PRODUCTS
79 WEST MONROE ST.
CHICAGO 3, ILL.

READER-SERVICE CARD RP-4-59

ROCK PRODUCTS
79 W. Monroe St.

APRIL, 1959
Chicago 3, Illinois

Cannot be serviced after June 1, 1959 postmark.

Please print or type

Name_____ Position_____

Company (In Full)_____

Company Address_____ City_____ Zone_____ State_____

MAIN PRODUCT OF PLANT_____ CAPACITY_____

[THIS INFORMATION WILL HELP US GIVE YOU MORE COMPLETE SERVICE.]

Send information on items identified by key numbers beside or below items of interest to you. List your choice in numerical order. Limit 10 per card.

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IF NO KEY NUMBER, USE COMPANY NAME

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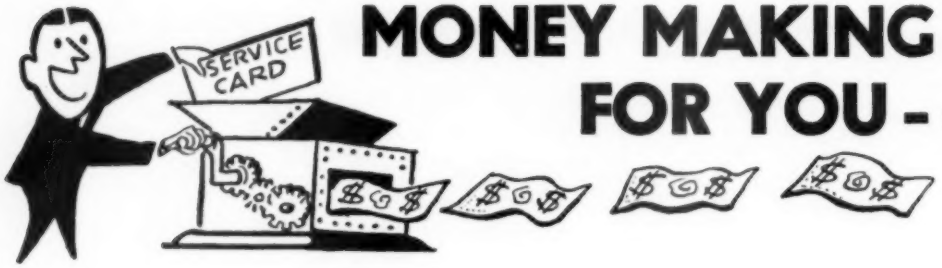

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ONLY GARDNER-DENVER ROTARIES

Give you all these field-proved portable compressor advantages

Left to right, Models RP125, RP210, RP365, RP600, RP900.

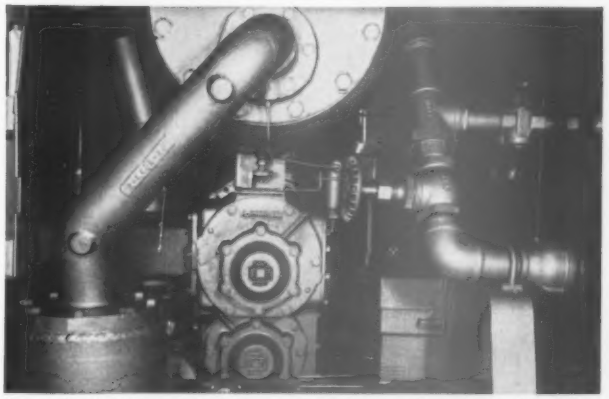
Safe, sure all-weather operation—water-oil cooling system keeps engine and compressor temperature constant.

Lubricated cold-weather starting—clutch allows compressor oil to be warmed before engaging compressor.

Positive flood lubrication—instantaneous oil flow not dependent on receiver pressure.

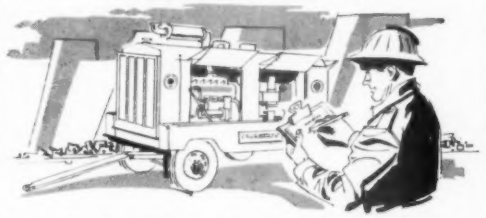
Fuel economy plus—exclusive Gardner-Denver "THRIFTMETER"® saves fuel, saves wear and tear on engine and compressor.

Simplified field maintenance—all compressor parts are easy to get to, making inspection and field maintenance faster and easier. See your Gardner-Denver distributor or write for bulletin.



The Gardner-Denver rotary requires no major dismantling job for inspection of working parts. Only a few minutes are required to remove the 12 cap screws to expose all the blades for routine inspection or replacement that assures trouble-free operation.

KEEPING TAB ON PROGRESS



At Gardner-Denver there's no substitute for men—our philosophy of growth for 100 years. Gardner-Denver engineers know your field from field experience . . . keep in constant touch with men and machinery . . . seek new ways of developing surer, safer, more productive equipment.

Gardner-Denver RP900's on Glen Canyon diversion tunnel job provide trouble-free air for all phases of this major project.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ont.

Enter 1481 on Reader Card

THIS MONTH'S . . . CERTIFIED OWNER REPORTS

GALE BRIGGS, CHARLOTTE, MICHIGAN:

PER DOLLAR OF INVESTMENT

EFFICIENCY INCREASED WITH HIGH-SPEED TERRALOAD'R

Gale Briggs, Charlotte, Mich., hasn't had time to figure his dollar savings — but he can see a world of difference in operating efficiency since trading his former competitive-make loader for a 4-wheel-drive Case® W-9 Terraload'r, with torque converter and power-shift transmission. Says Briggs, "The W-9 does a much more efficient job of loading the crusher (right). In addition, it loads-out trucks, stockpiles sand and stone, strips overburden, handles pit clean-up and maintains our haul roads with amazing speed."

Three quick passes with the big 2¾-cu. yd. Terraload'r bucket are all it takes to fill Briggs' sand trucks. Operators like the perfectly engineered balance and maneuverability of the W-9. They also have high praise for the extra visibility and safety gained by pivoting the lift arms *ahead* of the operator's compartment, where they are completely out of the way.

CHIER INDUSTRIAL SAND CO., BERLIN, WISCONSIN . . .

CASE W-9 DIESEL RUNS 7 MILES FROM PITS TO PLANT — handles scattered assignments with one man

Chier Industrial Sand Co. of Berlin, Wis., needed a 6000-lb. capacity loader that would combine: (1) *Mobility* to operate between their main plant and three outlying pits; (2) *Traction* to move heavy loads in sand as fine as 46 mesh; (3) *Economy* of operation. Their choice of a 1¾-cu. yd. W-9 Terraload'r with Case diesel engine has already paid off, according to owner Leonard Chier. "We find it is much faster and more economical than our other two loaders . . . an all-around wonderful machine to work with." Chier's W-9 is shown at right loading-out shot sandstone in pit. *Just 20 minutes later* it was back at the screening and drying plant — seven miles away — loading, stockpiling, grading roads, and spotting boxcars.

"MY W-9 TERRALOAD'R DOES A LOT MORE WORK THAN OUR FORMER RIG"

W. B. TAYLOR SAND & GRAVEL CO., SHARON, PENNSYLVANIA...

ONE W-9 REPLACES 2 SHOVELS

W. B. Taylor Sand & Gravel Co., Sharon, Pa., cut the cost of loading washed sand and gravel from stockpiles to trucks, by replacing *two* crawler-mounted shovels with a *single* 1¾-cu. yd. Case W-9 Terraload'r. "It was a major operation just to move the shovels," says owner William Taylor. "The W-9 loads faster, and gives us greater mobility between stockpiles."

GET ALL THE FACTS on the cost-cutting CASE W-9

CASE®

J. I. CASE CO., RACINE, WIS.

CLIP...MAIL TODAY

J. I. CASE CO., Dept. D1479, Racine, Wisconsin

☐ Send free catalog on 6000-lb. capacity W-9 Terraload'r
☐ Send name of nearest Case Industrial Dealer

Name ..... Position .....

Company .....

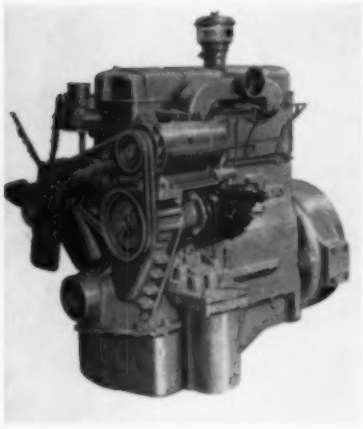
Address .....

City ..... State .....

C-TL-289

NEW MACHINERY

(Continued from page 174)



Diesel engines

INTRODUCTION of two new diesel engines, the 70-hp. J-70 and the 80-hp. J-80, has been announced. The engines are designed for such applications as light trucks, crawler tractors, pumping systems, shovels and cranes, graders, air compressors and generator sets.

They are designed to bring diesel engine economy to sizes of equipment which previously were usually powered by gasoline engines. Field tests during the last several years have shown that the J-70 and the J-80 can reduce fuel costs up to 65 or 70 cents per hour over gasoline engines doing the same work, the maker reports.

The engines are four cycle, naturally aspirated models of 4⅛ x 5-in. bore and stroke with 267-cu. in. piston displacement. The J-80 develops its rated horsepower at 2,500 rpm. while the J-70 is rated at 2,000 rpm. *Cummins Engine Co., Inc., Columbus, Ind.*

Enter 315 on Reader Card

Truck crane

A FOUR-AXLE, 50-ton capacity truck crane, Type 64-T, is available in 8 x 4 and 8 x 6 drives. T1 steel (100,000 psi. yield strength) has been used in the main frame and frame components, resulting in high strength and rigidity at reduced weight. Special features include pin-on type front and rear outrigger boxes, roller mounted outrigger beams, full length deck-fender design and full vision operator's cab. Ease of steering is accomplished through hydraulic power on all four front wheels.

The heavy-duty rotating assembly features air control for all motions, large clutches and brakes, fully enclosed pump lubricated deck gears,

power raised and lowered telescoping back hitch gantry, independent planetary boom hoist, smooth operating two-shoe swing clutches, antifriction bearings on all main shafting and main cable drums, gasoline or diesel engine with torque converter and a one-piece rear counterweight.

Optional equipment available includes auxiliary third drum, power load lowering device, hoist drum reversing device and hand or foot controlled accelerator. Various front end equipment is available. Crane booms are extendible to 150 or 180 ft. including jib. *Construction Equipment Div., Baldwin-Lima-Hamilton Corp., Lima, Ohio.*

Enter 316 on Reader Card

(Continued on page 184)

EHRSAM CUSTOM-BILT

BUCKET ELEVATORS

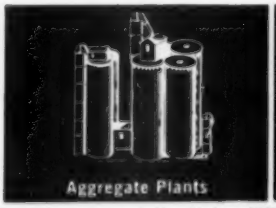
EHRSAM custom-bilt bucket elevators are designed to handle all materials from sand to rock. These units are an efficient method of conveying material by giving a low-repair and low-production cost.

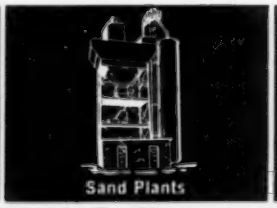
EHRSAM has been known since 1872 for rugged, well-engineered equipment. For years of trouble-free, dependable service . . . Buy the Best **BUY EHRSAM.**

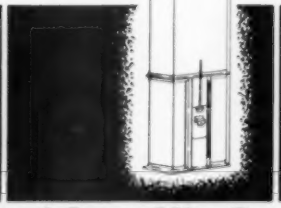
Low Initial Cost
Minimum Operation Cost
Easy Installation

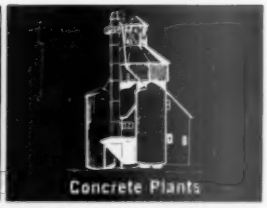
Centrifugal Type
Continuous Bucket Type
All-Steel Construction

Full Capacity
Ample Discharge
Non-choking Boot









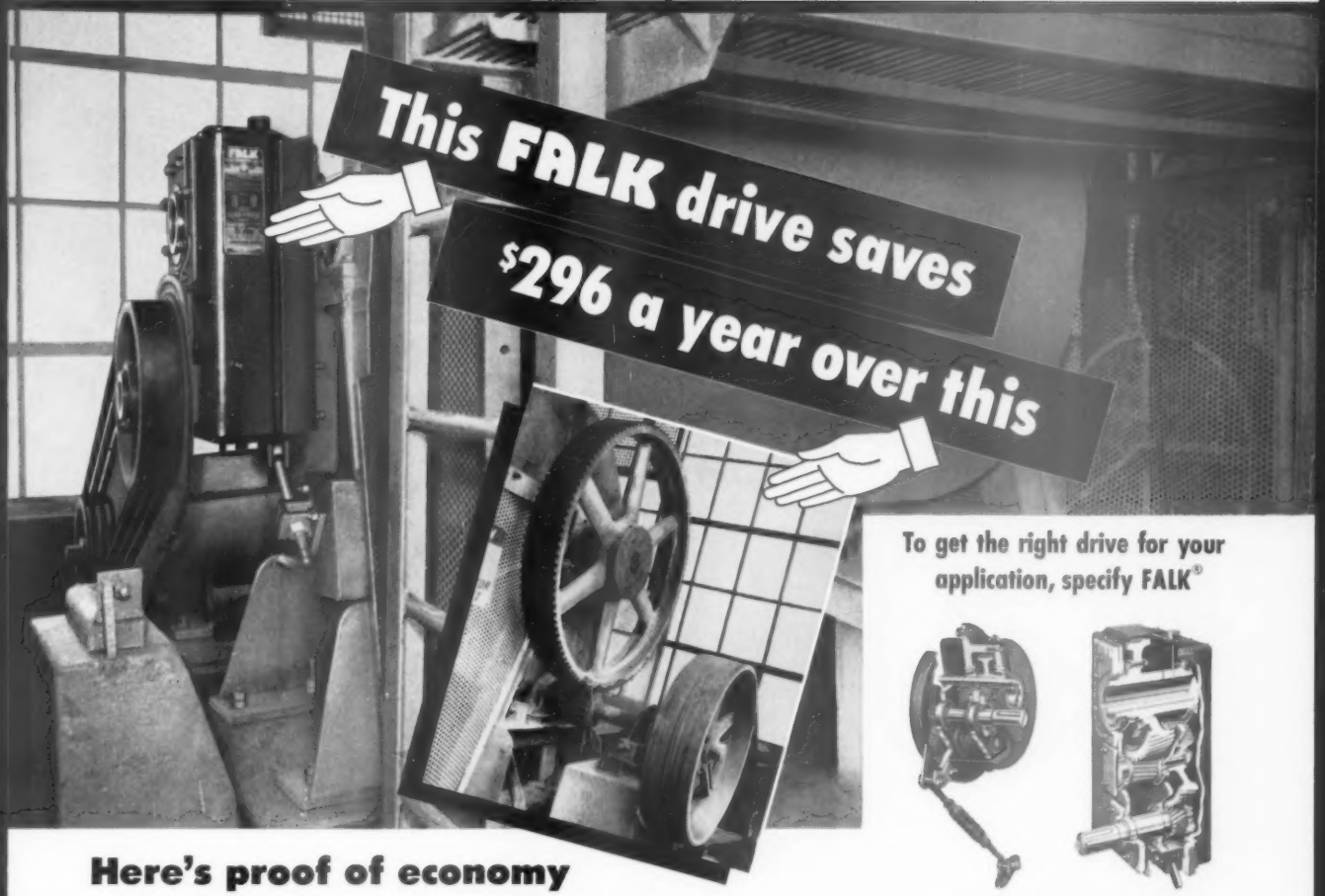
Designed and Built by: **The J. B. Ehrsam and Sons Mfg. Co.,** Enterprise, Kansas

SALES OFFICES:
KANSAS CITY, KANSAS
PHOENIX, ARIZONA

REPRESENTATIVES:
EHRSAM PACIFIC, INC. — SAN FRANCISCO, CALIFORNIA
WILKS-BERMEL CO. — LANCASTER, NEW YORK
CARL THOMER CO. — MINNEAPOLIS, MINNESOTA

Enter 1505 on Reader Card

Enter 1506 on Reader Card



Here's proof of economy with FALK Shaft Mounted Drives

PROBLEM—For many years, a prominent Eastern abrasives manufacturer* experienced high maintenance and down-time costs, as well as excessive noise and vibration, in the operation of 19 pebble mills driven by open spur gears. Drive gears and jack shaft pillow blocks required frequent repairs or replacement, and trunnion shafts often failed, due to radial overloading of the bull gear when broken pinion teeth bottomed between gear teeth.

SOLUTION—After numerous unsuccessful approaches to these problems, the solution was found by mounting a Size 315J FALK Shaft Mounted Drive directly on the mill drive trunnion. This eliminated objectionable gear noise and vibration...greatly reduced costly down-time and loss of production...and cut annual maintenance and replacement expenses as indicated by the following figures taken from the customer's records:

Spur Gear-and-Pinion Drive		FALK Shaft Mounted Drive	
Bull Gears	$ 56	VEE Belts	$ 30
Pinions	120	FALK Shaft Mounted Drive (based on 10-year life)	70
Pillow Blocks	90		
VEE Belts	30		
Trunnion (5-year life)	100		
Annual cost	$396	Annual cost	$100
		ANNUAL SAVINGS	$296

IF OBSOLETE DRIVES ARE COSTING YOU MONEY, a change to Falk All-Steel Shaft Mounted Drives can effect important savings in money and production. Used on almost any type of machine, these compact, rugged units are establishing new standards of economy and efficiency in many industries. Specify FALK Drives on your purchased equipment...For full details, **write for Bulletin 7100.**

*Name on request

THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN

MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS

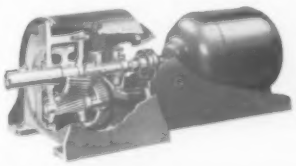
Representatives and Distributors in Most Principal Cities

To get the right drive for your application, specify FALK®

SHAFT MOUNTED DRIVES

Horizontal or vertical units—½ to 50 hp—420 to 5 rpm—single and two double reduction ratios—output torque ratings up to 41,000 lb-in (consult factory for higher torque capacity).

• • •



ALL-MOTOR® MOTOREDUCERS

Sizes up to 75 hp—furnished with or without standard foot-mounted motor—standard output speeds 1.2 to 520 rpm (with 1750 rpm motors)—ratios as high as 54,000:1 in semi-standard designs. Integral units (gearmotor type) also available. Ask for **Bulletin 3100.**

• • •

FALK Drives are available from factory and distributor stocks from coast to coast. Consult your Falk Representative or Distributor.

FALK

...a good name in industry

NEW MACHINERY

(Continued from page 182)

Tractor-shovel

THE NEWEST ADDITION to the Trojan line of tractor shovels is a 4-wheel drive, pneumatic-tired tractor shovel, weighing 27,400 lb. and with a maximum lifting capacity of 18,000 lb. The new Model 304, rated at 3-cu. yd. capacity, is engineered to handle all types of bulk materials.

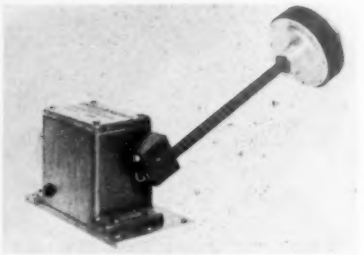
The new functional design of the Model 304 is said to afford maximum operational efficiency, excellent service accessibility, full 360-deg. visibility and maximum personal safety for the operator.

The operator's compartment of the new unit is equipped with a panoramic instrument panel as a time-saving convenience for the operator. All gauges necessary to indicate the proper functioning of the tractor shovel are within easy view on the panel. An hour meter is standard equipment.

The new Trojan 304 is powered by a 6-cyl. diesel engine, developing 160 hp. at 2,500 rpm. It is equipped with a full power-shift, 4-speed transmission, and a 3-to-1 torque multiplying torque converter. The travel speed ranges from a 3 mph. in low gear to 23 mph. in fourth gear, in both forward and reverse. Hydraulic power steering and four-wheel power brakes on the new Trojan tractor shovel help to decrease operator fatigue. *The Yale & Towne Mfg. Co., Trojan Division, Batavia, N.Y., or San Leandro, Calif.*

Enter 311 on Reader Card

Conveyor belt control



A LOAD AND MOTION sensor to start, stop or control sequencing of automatic conveyorized operations has been developed. The new unit, called Sentron, will signal any combination of conditions involving load or no-load, motion or no-motion of a conveyor belt.

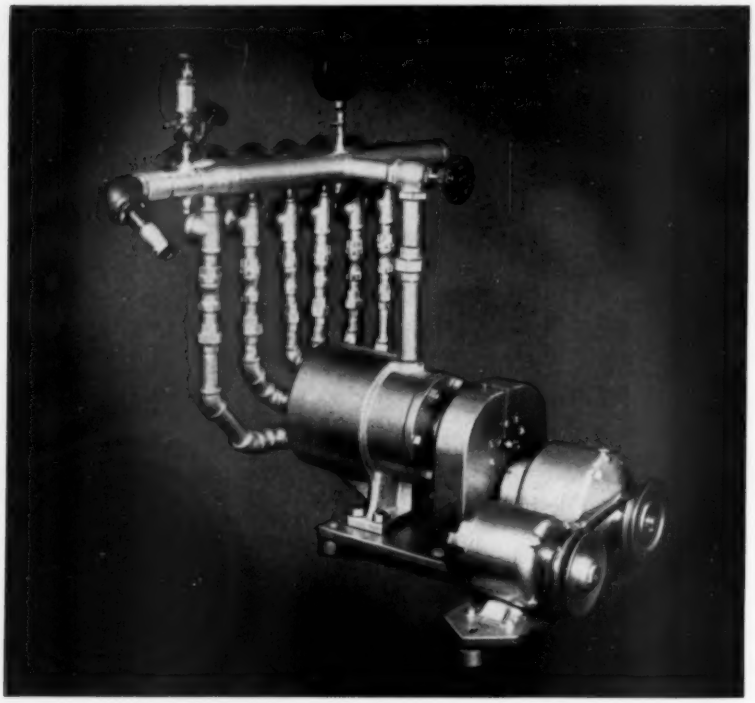
The Sentron can be used in many ways in industrial, chemical, mining and related fields to stop other belts or equipment in case a conveyor belt slips or breaks; to control the sequence operation of a conveyor system; as a remote control signal; to indicate conveyor slippage or stoppage empty or loaded; and as a means of actuating other equipment based on a set of go or no-go conditions.

The control housing of the Sentron is cast iron with a dust-tight, weatherproof enclosure. An actuating arm of stainless steel tubing extends from the control housing, supporting a freely rotating motion sensing element in a wheel housing. This wheel contains a normally open magnetic switch. Movement of the conveyor belt rotates the wheel to close the switch.

The wheel is held against the underside of the belt under tension. Any load on the belt sufficient to deflect it by as little as 1/16 in. will actuate the micro-switch in the control housing. *The Johnson-March Corp., Phila., Pa.*

Enter 312 on Reader Card

(Continued on page 188)



MANITOWOC CENTRAL CONTROL VALVE

FOR SLURRY AGITATORS

The Manitowoc Central Control Valve is a self-contained, fast acting unit complete with air manifold and valve drive. Shown above is a motor-driven central control valve regulating air supply to six slurry agitators. It can be timed with great precision to suit any desired operating cycle and any electrical current characteristic. The entire unit is mounted on a common bed plate with driving mechanism fully enclosed and automatically lubricated.

The Manitowoc Slurry Agitator is designed to use air on an intermittent cycle—as supplied by the Central Control Valve—as economically as possible, and at the same time employs a unique method of piping that prevents the air line from plugging.

Get complete information on the Manitowoc Central Control Valve, Slurry Agitators and Recuperators for rotary kilns—write today!

MANITOWOC SHIPBUILDING, INC.
MANITOWOC, WISCONSIN

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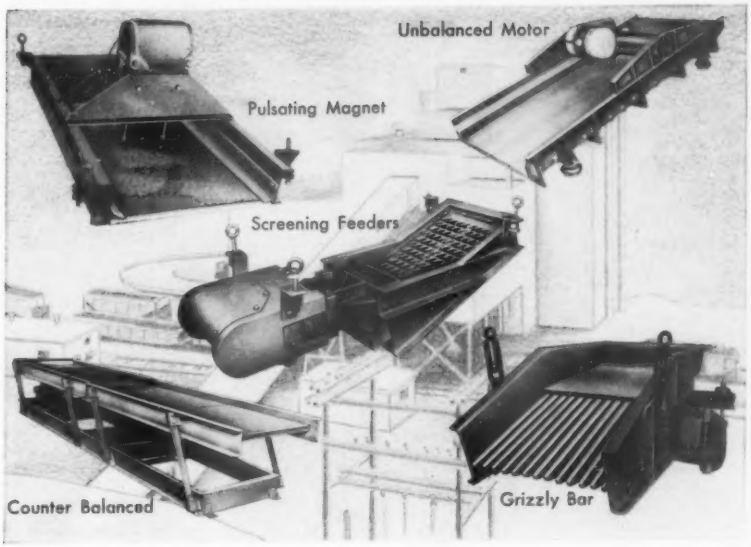
SYNTRON

VIBRATING SCREENS



for efficient, dependable low cost scalping, sizing, dewatering or fine screening

SYNTRON builds a vibrating screen for every screening job from heavy duty scalping of rock to fine quality control screening of aggregates.

SYNTRON Vibrating Screens are built in a variety of styles—one, two or three deck models with drive units designed for each particular screen. Available in sizes ranging from 2 feet wide x 5 feet long to 6 feet wide x 14 feet long plus the 4 feet wide x 20 feet long conveyor screen.

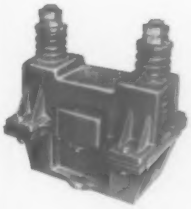
SYNTRON Screens provide uniform vibration, eliminating dead spots. Constant full screen efficiency provides more effective separation and higher capacity.

SYNTRON Screens combine efficiency, dependability and low maintenance to give better separation, greater tonnage at lower cost.

SYNTRON Screens are compact, easy to install, easy to maintain.

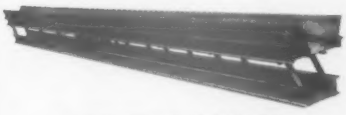
Write for complete information on all SYNTRON Screens

Other SYNTRON Equipment of proven dependable Quality



BIN VIBRATORS

VIBRATORY FEEDERS



COUNTER BALANCED VIBRATING CONVEYORS

CAR SHAKERS

PACKERS & JOLTERS

SYNTRON COMPANY
450 Lexington Ave. Homer City, Penna.

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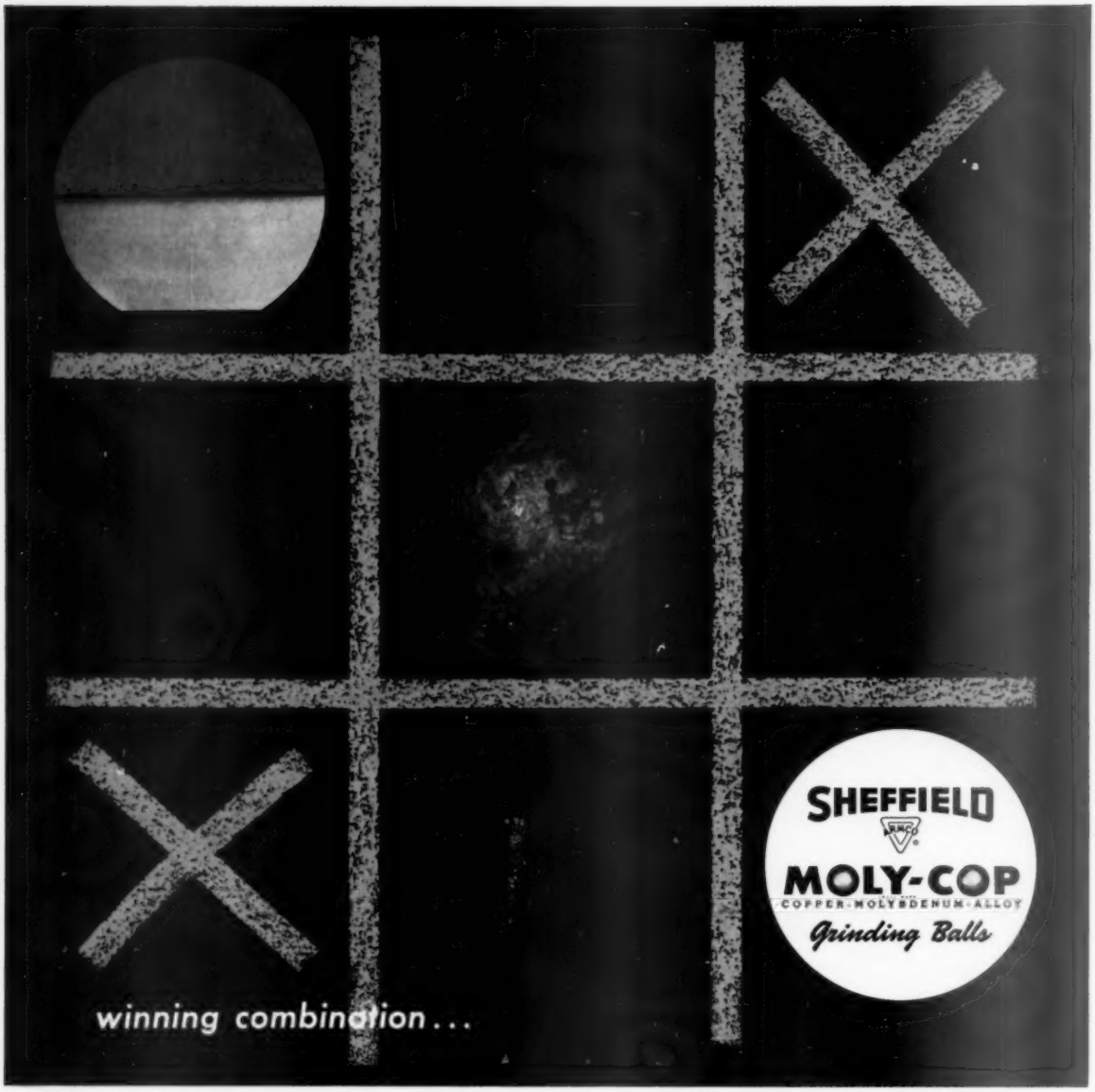

The Standard of Comparison for HARDNESS AND TOUGHNESS

In performance tests by company after company, Sheffield Moly-Cop balls are used as the quality standard by which grinding balls of every make are measured. A big reason is the perfect balance of Moly-Cop hardness and toughness—unvarying to the core. This means a longer grind, fewer chargings, less down-time, and other production economies for you.

New steels are born at Armco

SHEFFIELD DIVISION

ARMCO STEEL CORPORATION

OTHER DIVISIONS AND SUBSIDIARIES: Armco Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

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Enter 1526 on Reader Card

ANNOUNCING TWO NEW LIMAS

TYPE 64	TYPE 64-SC
1¼ Yd. Shovel	SPECIAL CRANE
40 Ton Crane	50 Ton Capacity
13'3" Long Crawlers	17'1½" Long Crawlers
10'8" Wide Crawlers	14'0" Wide Crawlers
With 30" Treads	With 42" Treads

- Easily converts in field for use as shovel, crane, dragline, clamshell or pullshovel
- Crawler, truck or wagon mounting available
- Choice of gas or diesel power—with torque converter
- Lima's precision air control lets operator work all day without tiring

Newest Lima, Type 64—shown here with 22-ft. boom, 18-ft. handle, 1¼-yd. dipper.

The rugged new Lima Type 64 fills a definite need for a heavy duty 1¼-yd. shovel, 40-ton crane, dragline and 1¼-yd. pullshovel that will combine dependable high performance with low maintenance costs, for maximum profit! The new type 64-SC with extra long, wide crawlers is designed for special crane service. This new Lima has a capacity of 50 tons on a 40′ boom at 10′ radius.

Lima Quality Features

You get these, and many more, Lima quality features in the 64 and 64-SC; precision-machined teeth on heat-treated alloy steel gears; long-lasting, trouble-free anti-friction roller bearings; safe, sure band brake and jaw clutch power steering; splined shafting; extra-large-diameter hoist, crowd swing and propel clutches; independent planetary boom hoist.

Crawler truck base is strong one-piece alloy steel casting with integral machined ring gear and flame-hardened roller path. Rotating base is one-piece carbon steel casting, built to absorb severest shocks of hard digging. Center pin is relieved of strain by six hook-type conical rollers tapered to revolve naturally around double-flanged roller path.

Like all Limas, the 64 and 64-SC are good travelers. Strips down easily for haulage. Side frame assemblies, complete with treads, are simple to remove. Ledge mounted, one-piece rear counterweight can be easily removed. When equipped for crane service, folding or telescoping gantries can be lowered to cab height for low clearance.

Designed to Outperform

Service is easy, every part readily accessible. Simplicity of power transmission design lessens friction, reduces upkeep, and delivers more power. Torque converter prevents engine stall, cushions shocks to operator and machine, increases performance by building up line pull.

Learn more about the Type 64 and 64-SC, newest members of the Lima family of high-performance construction equipment —The Lima line includes shovels to 6 cu. yd., cranes to 110 tons, draglines variable. Write or see your Lima distributor now.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio

BALDWIN · LIMA · HAMILTON

5938

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

NEW MACHINERY

(Continued from page 184)

Tractor transmission

A NEW TYPE of tractor transmission, the Select-O-Speed, which can be shifted "on-the-go" without use of a clutch pedal, has been announced.

Versatility of the transmission for industrial applications is reported to be one of its great advantages. Shifting from any gear to any other gear is a simple matter of "dialing" the desired gear ratio with a small hand-controlled lever just below the steering wheel. There is no need to bring the tractor to a stop while the change of gear ratios is being made. It has 10 forward and 2 reverse speeds.

Gear-driven at all times, the Select-O-Speed gives power that is instantly available at the rear wheels. Thus the device enables the operator to improve his efficiency and at the same time serves to improve the fuel economy of the tractor.

The 10 forward speeds overlap so that the operator can keep his engine running at the most efficient throttle setting while choosing a ground speed ranging from about ½ mph. to more than 18 mph. The transmission can be

completely disengaged when the tractor is being towed.

The transmission selector also has a "neutral" and "park" position, and the tractor engine can only be started with the transmission in "park." When the engine is not running, the transmission automatically goes into "park" with the wheels locked; thus the brakes never need to be set. *Tractor and Implement Div., Ford Motor Co., Birmingham, Mich.*

Enter 313 on Reader Card

Glass fabric filter tubes

PROBLEMS OF HIGH-TEMPERATURE dust and fume control in industrial plants can now be met with siliconized glass fabric tubes. A new, hard yarn glass fabric, woven from a more stabilized yarn of a tigher nature has been developed. Tests indicate that this glass fabric makes possible the reduction of pressure drop and an increased air-to-cloth ratio.

Cost of bag-house installations can be drastically reduced, claims the manufacturer, because the increased air-to-cloth ratios of the new filter require less fabric area. It will be necessary to install only half as many filter bags, thus taking up only half the space formerly necessary. The new fabric, woven to varying permeabilities, allows the filter material to dictate almost the entire pressure drop. In bag houses equipped with these tubes, air reversal valves will discharge the dust and no shaking mechanism is required, thus reducing the cost of maintenance of the units.

Most existing bag houses using non-glass fabrics can be re-equipped with siliconized glass fabric filter tubes without loss of capacity or efficiency. The shaking mechanisms now necessary in such installations may be discontinued. However, to insure maximum life and performance, filter-bags of special design are fabricated for each individual installation. *Coast Mfg. and Supply Co., P. O. Box 71, Livermore, Calif.*

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END

MADSEN *Equipment that Serves.*

Easy to set up and a honey to operate

We like the portability and quick-erection features... the fast-mixing action and the clean operation of our Madsen Asphalt Plant — *says Gene Ballard, Vice President, East Coast Asphalt Corp., Fort Lauderdale, Florida*

Owners of MADSEN Asphalt Plants may not agree on which MADSEN feature is most outstanding, but, they all agree that MADSEN gives them the right combination of advanced engineering features for a more profitable asphalt plant operation. The MADSEN Model 481 Asphalt Plant, for example, offers more than 25 big features and advantages that increase production, reduce maintenance, and save countless dollars in plant operation. Some of these features are shown below. See your MADSEN Distributor for the complete story.

MADSEN
ASPHALT PLANTS

Built in sizes of 1000-lbs. to 6000-lbs. batch capacity

The big MADSEN 5000-lb. Model 481 batch capacity asphalt plant shown above is owned and operated by East Coast Asphalt Corporation of Fort Lauderdale, Florida. It has a 50-ton, 4-compartment hot bin, an 84" x 36' Madsen Dryer, a Madsen 12' diam. Cyclone Dust Collector and a Madsen Triple Wet Tube Dust Washer.

This plant is capable of producing up to 200 T.P.H. on a 45-second charge-mix discharge cycle.

FEWER SEPARATE PARTS MEAN FASTER ERECTION — Complete box-like unit sections are built for transport on the highways. All major components may be wheel-equipped at the factory or in the field.

FAST, PRECISION TIMING AND WEIGHING

MADSEN Twin-Shaft PUG MILL MIXERS — Combined with Madsen Asphalt Pressure Injection System (Patented) to provide the fastest and most thorough mixing action known to the industry.

ROLL-AWAY WEIGH-BOX — Exposes mixer for fast, easy servicing of mixer tips and shanks.

CLEANEST OPERATION — Madsen Asphalt Plants meet air pollution requirements everywhere. Tests prove Madsen Triple Wet Tube Dust Washers are 99.7% efficient!

Ask your MADSEN Distributor for Catalog No. 800-A or write MADSEN WORKS

MADSEN maintains a complete parts stock in Los Angeles and Lima, Ohio

MADSEN WORKS / BALDWIN-LIMA-HAMILTON Construction Equipment Division

14120 E. ROSECRANS AVE., P.O. BOX 38, LA MIRADA, CALIFORNIA
BALDWIN-LIMA-HAMILTON CORPORATION, LIMA, OHIO

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RAYMOND ROLLER MILLS

Engineered for...

AUTOMATIC, UNIFORM FINE GRINDING WITH WHIZZER SEPARATION

DOUBLE WHIZZER AIR SEPARATOR

Simplified form of fineness control. Wide range of classification with one external adjustment while in operation.

Throughout the non-metallics industry, Raymond Roller Mills are setting records of performance that pay off in extra profits of production.

That is why they dominate the field in pulverizing gypsum, limestone, bentonite, kaolin, barytes, clays, phosphate rock, magnesite, bauxite and a long list of special materials.

Some of the key features of Raymond Mills that enable you to get better results are:—

Whizzer air separation **to give uniform classification with maximum recovery of the fines, and to provide instant fineness control from 60% minus 100 mesh to 99.9% or better passing 325 mesh material.**

Pneumatic feed control **to maintain the mill operating at peak capacity under all conditions.**

Self-lubricating oil journals **and automatic oil circulating system insure economy in maintenance and lubrication.**

Drying accessories **may be used with the Mill to remove moisture while pulverizing . . . a cost saving operation.**

In this new age of industry, use modern Raymond Roller Mills to get the benefits of lowest production costs.

Full line of Raymond Roller Mills covered in detail by Catalog No. 79. Write today for your copy.

COMBUSTION ENGINEERING, INC.

Raymond Division

1108 W. BLACKHAWK ST.
CHICAGO 22, ILLINOIS

SALES OFFICES IN PRINCIPAL CITIES

Combustion Engineering-Superheater Ltd., Montreal, Canada

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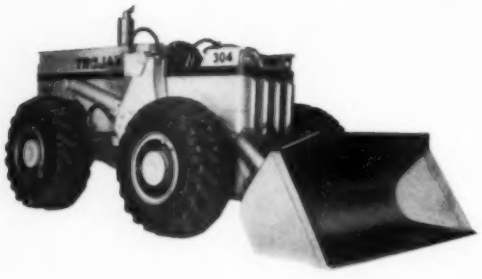
TROJAN
YALE & TOWNE

ALL NEW 3yd. TROJAN

ENGINEERED FOR PEAK PRODUCTION



New low silhouette for greater visibility. Exceptional service accessibility . . . Heavy-duty front bumper integral with frame for added protection . . . Recessed headlights . . . 24-volt starting and lighting system . . . Foam rubber bucket seat for operator comfort.

The rugged new Trojan is engineered to tackle the toughest jobs industry can offer . . . We've put more time on the drawing board, more time on the proving ground — studied, job-tested and proven every detail of design and construction. The most demanding working problems a 3 yd. machine can face have been anticipated . . . Extra strength and extra power have been added . . . The result is a tractor-shovel that promises you unequalled profit-making performance.

In addition, we have maintained every familiar Trojan feature . . . The unparalleled safety of Trojan's patented safety curve lift arms . . . Powerful horizontal thrust and pry-out action with the full power of a big 160 h.p. Cummins diesel . . . Maximum lifting capacity of 9 tons . . . Wide tread and long wheelbase for better balance and stability . . . 4-speed full power shifting and 4-wheel power brakes as standard equipment — plus a host of other important features that result in faster, more efficient, more profitable operation!

Let your Trojan distributor point out how — feature for feature — the new Trojan 304 offers you more working benefits, more real value, than any machine on your job!

THE YALE & TOWNE MANUFACTURING COMPANY
TROJAN DIVISION BATAVIA, NEW YORK SAN LEANDRO, CALIFORNIA

TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

"My Boss Read the Specs with Tears in His Eyes"

He looked like he'd lost his best friend — money.

"Goodbye contract," he said quietly. "We just can't hope to meet these government specifications for aggregate."

"Yeah, it's pretty hopeless with our set-up. Of course, if we had a hydraulic classifier — " (I was kidding.)

"You're out of your mind. Around here water costs more than sand."

"Well how about an air separator, like Sturtevant makes?" I shot back. "Pete's brother runs a pit at Rapid City and says they clean sand without water. By de-dusting it."

He was skeptical. "Aren't Sturtevants for cement?"

I nodded. "They are, but you see quite a few in aggregates, too, nowadays. Might be worth a try."

The Boss smiled for the first time that morning. "What the heck are you waiting for? Get 'em on the phone and let's see what they can do."

So we got the contract, thanks to the 12 ft. Sturtevant we now use for de-dusting and pre-classification. It's a beaut. Gives good service outdoors the year round, with no protection except for the motor housing.

If you're in this business, Brother, it might pay you to have a good long look at what a Sturtevant can do for tight aggregate specifications.

Sturtevant Air Separators classify production loads up to 150 tph by exact control of air currents and centrifugal force. Simple, quick adjustments make possible the selection (or rejection) of particles in the 30 to 400 mesh range. Nine standard models available, varying in size from 3′ to 18′.

Learn how a Sturtevant Air Separator can help your aggregates production. Write today describing your needs. Address: Sturtevant Mill Co., 102 Clayton St., Boston 22, Mass.

STURTEVANT AIR SEPARATORS CLASSIFY SAND WITHOUT WATER

PRODUCING CLEAN SAND, the Sturtevant acts as a de-duster by removing fine mesh particles from the throughput. Particularly valuable where water is limited.

EASING SCREEN LOADS, the Sturtevant rejects unwanted fines and circuits coarser sizes to screens for grading. By this pre-classification, the possibility of blinding screens with fines is minimized and output considerably increased. Also, excessive dust problems are eliminated.

WHEN BLENDING IS NECESSARY, the Sturtevant selects fines from the crushing operation. This stockpiled product then can be used in the blending operation to overcome fineness modulus deficiencies.

GRINDERS
CRUSHERS
PULVERIZERS
MICRON-GRINDERS

STURTEVANT MILL CO.

Dry Processing Equipment

MIXERS
BLENDERS
ELEVATORS
AIR SEPARATORS

The "OPEN-DOOR" to *lower* operating costs over *more* years

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Enter 1484 on Reader Card

MANUFACTURERS NEWS

Sabin is Denver's "Ad Man of the Year"

GEROULD A. SABIN, advertising director of the Colorado Fuel and Iron Corp., was presented with the award "Advertising Man of the Year" at a recent meeting of the Advertising Club of Denver. The award, made previously to only two others, was given for "ethical performance of advertising" during a lifetime career in advertising.

Mr. Sabin began work with Colorado Fuel & Iron in 1926 as sales promotion director. In 1930 he became advertising manager. After the firm merged with Wickwire Spencer Steel Co. in 1946 he was appointed director of advertising.

Porter gets Thermoid Corp. in merger

H. K. PORTER CO., INC., announced recently that its proposed merger with Thermoid Corp., Trenton, N.J., has been approved by Thermoid stockholders, and so was completed. Thermoid is being consolidated with Porter's Quaker Rubber Division to form a new Thermoid Division. The division will make the rubber conveyor and transmission belts, hoses, brake and clutch materials which Thermoid has made, and Quaker's rubber and friction products for belting, hose and molded goods.

The new Thermoid Division is headed by Warren E. Hill, former Thermoid president, as vice president and general manager. George Dauphinais is vice president, operations; J. R. Alexander, vice president for marketing and G. E. Counselman, general sales manager.

Sommer, Burkett head American Cyanamid group

N. B. Sommer

J. R. Burkett

DR. N. B. SOMMER is new manager of the explosives and mining chemicals department of American Cyanamid Co., New York City. He had been assistant to the executive vice president. Mr. Sommer joined the firm in 1944 as a research chemist in its Stamford, Conn., laboratories. Later he headed new product development and was marketing manager of plastics in the Plastics and Resins Division.

American Cyanamid also announced that John R. Burkett has been appointed general sales manager for the explosives and mining chemicals department. With the firm 24 years, he had been assistant to the manager and business manager in the dyes department, and assistant to the manager of explosives and mining chemicals.

Heil gets Truck Engineering

TRUCK ENGINEERING CORP., Cleveland, Ohio, has been purchased by The Heil Co., Milwaukee, Wis. Truck Engineering manufactures dump trailers used in hauling sand, gravel and other bulk materials. It recently has specialized in a patented hydraulic frameless trailer which, weighing less than others, can carry higher legal payloads. The Cleveland firm will be a part of Heil's body and hoist division. Truck Engineering president Julius L. Glick will continue as general manager of the TEC Division of Heil.

Russell named Hardinge executive vice president

ROBERT J. RUSSELL has been appointed executive vice president of the Hardinge Co., Inc., York, Pa. He continues as treasurer.

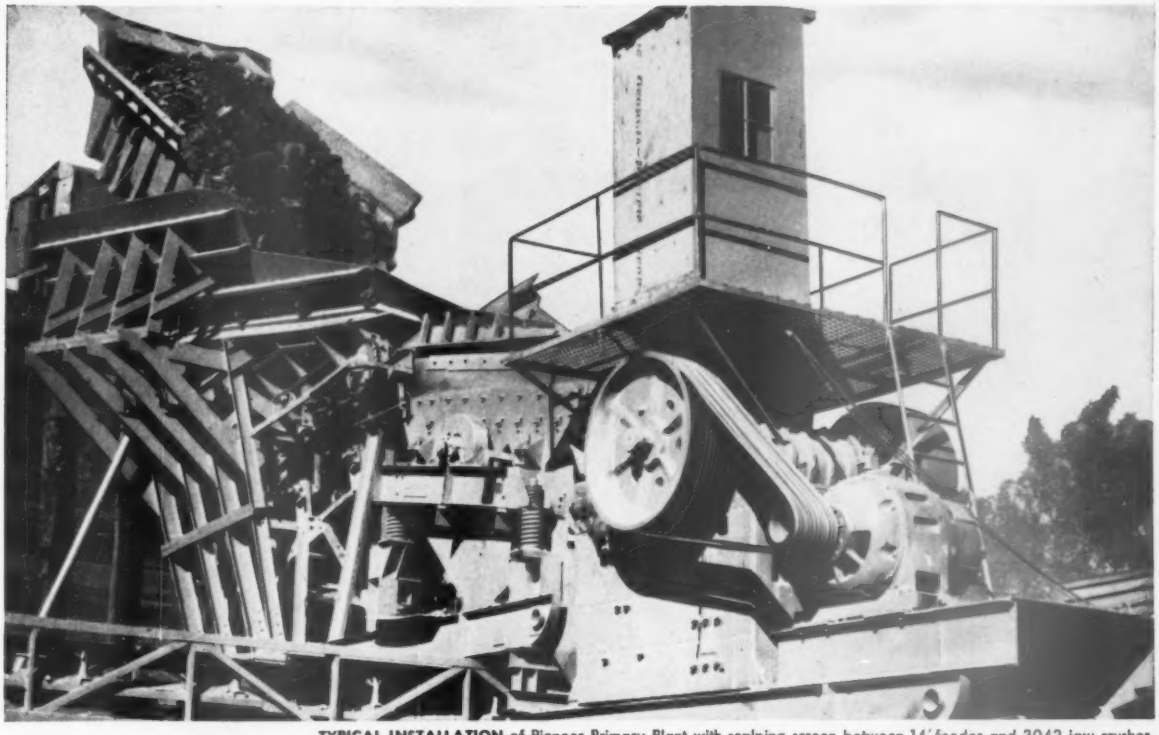
Warner heads Hoyt sales

ROBERT K. WARNER has been elected vice president-sales of the Hoyt Wire Cloth Co., Lancaster, Pa. With Hoyt since 1954, Mr. Warner had been employed by John A. Roebling's Sons Corp., Trenton, N.J., and Gilbert and Bennett Manufacturing Co., Georgetown, Conn.

Yaun tells of new plant

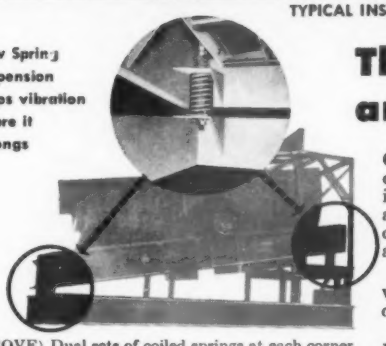
YAUN MANUFACTURING CO., INC., Baton Rouge, La., is building a new plant in McComb, Miss., in which it will produce the larger models in its line of buckets from ¼ cu. yd. to 40 cu. yd. The firm makes clamshell, dragline, concrete and other buckets.

(Continued on page 196)



TYPICAL INSTALLATION of Pioneer Primary Plant with scalping screen between 14' feeder and 3042 jaw crusher

New Spring Suspension keeps vibration where it belongs



(ABOVE) Dual sets of coiled springs at each corner of screen frame actually float the screen to prevent transfer of vibration to the supporting structure. This is *an exclusive feature* of PIONEER Vibrating Screens that increases screening efficiency while protecting the frame and structure.

There's only one "best" way to design an efficient stationary quarry plant

Overall design of an efficient stationary quarry plant calls for thoughtful probing in at least four important design areas: 1) installation cost, 2) plant components, 3) performance records, and 4) maintenance expense.

And when you get right up to the wire, you'll generally find there's really *only one best way* to design it.

Let's consider, for a moment, how PIONEER checks out in these areas:

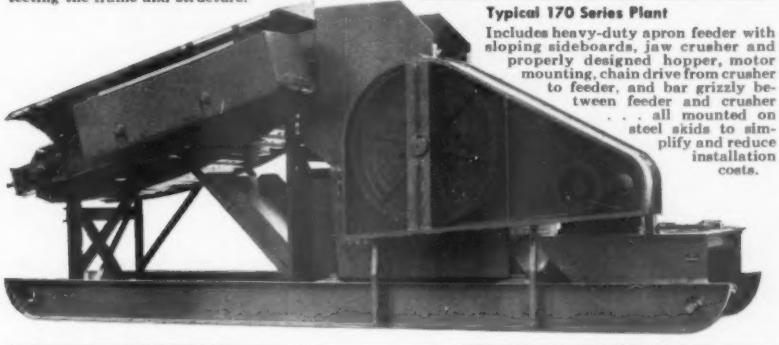
Installation cost. All major components are designed as completely integrated units to facilitate field erection. (See, for example, skid-mounted feeder and crusher shown at bottom left.)

Plant components. Construction of PIONEER Feeders, Crushers, Screens and Conveyors is based on improved design features that make them brutes for sustained strength and smooth operation. (Secondary spring suspension of vibrating screens is a typical example.)

Performance record. PIONEER heavy-duty feeders and overhead eccentric jaw crushers are more often specified for the really tough jobs than are other feeders or crushers.

Maintenance expense. PIONEER Plants are built to give long and satisfactory service under the most strenuous operating conditions and with an absolute minimum of maintenance.

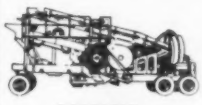
For all the facts, see your nearby PIONEER Distributor or write PIONEER ENGINEERING, Minneapolis 14, Minn.



Typical 170 Series Plant

Includes heavy-duty apron feeder with sloping sideboards, jaw crusher and properly designed hopper, motor mounting, chain drive from crusher to feeder, and bar grizzly between feeder and crusher . . . all mounted on steel skids to simplify and reduce installation costs.

Pioneer®
ENGINEERING
DIVISION OF POOR & COMPANY, INC.



PORTABLE CRUSHING PLANTS

WASHING PLANTS

STATIONARY QUARRY PLANTS

BITUMINOUS MIXING PLANTS

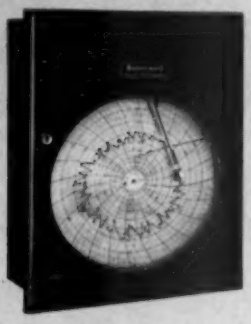
BITUMINOUS PAVERS

Enter 1520 on Reader Card

FOR TEMPERATURE CONTROL

***ElectroniK* Circular Chart Recorders and Controllers**—hold temperatures constant during process changes.

FOR FLOW CONTROL AND ACCOUNTING



Brown Integrating Recorder—Electronic integrator totals the flow and indicates on a direct reading counter.

FOR FURNACE PRESSURE CONTROL

Brown Indicating Furnace Pressure Controller—provides high furnace efficiency with instantaneous, automatic damper correction.

FOR TEMPERATURE & SPEED RECORDING

***ElectroniK* Strip Chart Recorder**—Single or Multiple Point . . . Records variables in wide, easily read chart.

FOR MISCELLANEOUS CHECKS

***ElectroniK* Precision Indicator**—pushbuttons in the door for checking up to 48 different temperatures or other variables.

. . . . Complete Kiln Control

Whether it's temperature, pressure, flow, or any other important kiln variable you want to measure or control, Honeywell makes just the instrumentation for you. Our complete line of instruments and associated accessories is as broad as your requirements . . . you can choose exactly what you need.

This means you get all the instrumentation you require from a single source, so there is undivided responsibility for the complete installation. And you are assured that equipment suggested for any process is recommended without bias.

For a new process, modernization program, or a replacement problem, find out how Honeywell can go to work . . . anywhere in the ceramic industry. Get in touch with your nearby Honeywell field engineer. He's as near as your phone.

MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

Honeywell

H HONEYWELL *First in Control*

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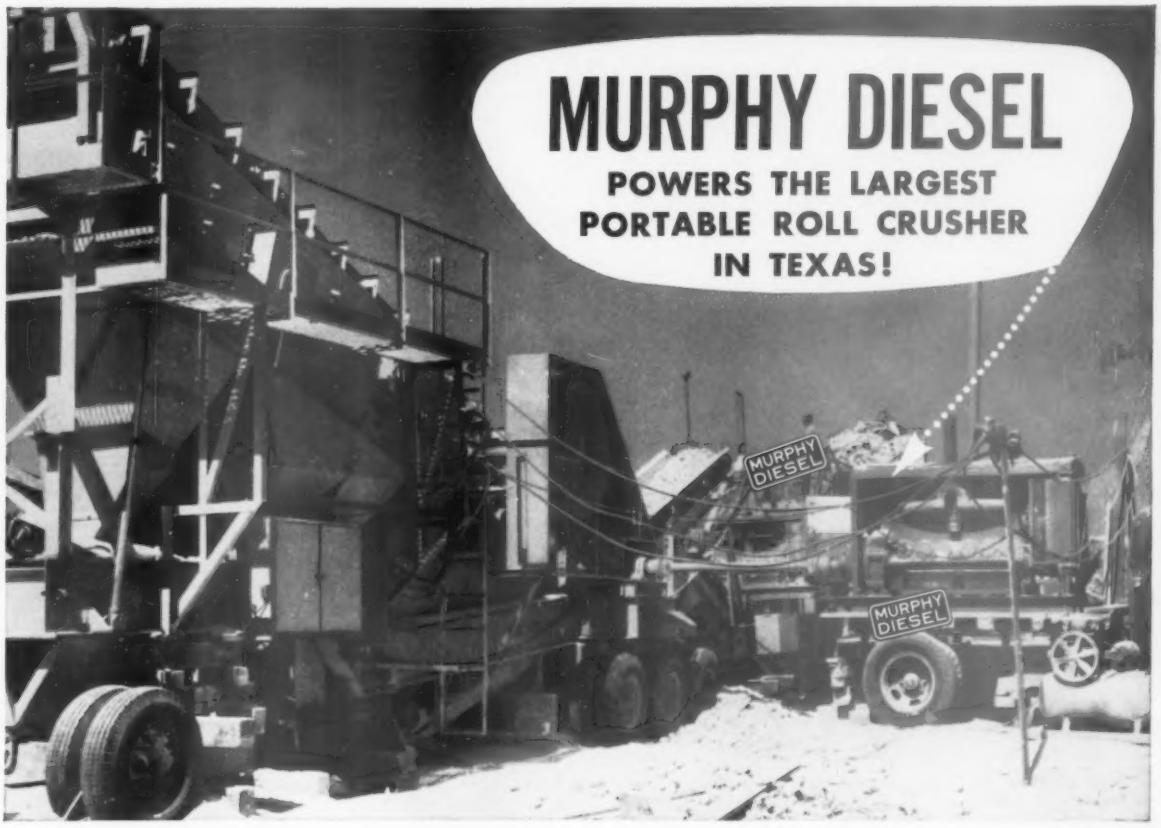

In addition to this truck-mounted Murphy Diesel shown handling the power requirements of Texas' biggest roll crusher, W. O. Pelphrey Construction Company uses a 177 HP (continuous) Murphy to power the portable primary in the background. They have a total of seven Murphy Diesels in service.

225 HP MURPHY drives a 30" x 60" Roll Crusher in W. O. Pelphrey's portable secondary plant

When it comes to heavy-duty power, you can't beat a Murphy Diesel. Ask W. O. Pelphrey of Ft. Worth about the performance of his 225 HP (continuous) Murphy, powering a secondary that's big by any standards.

Any Murphy Diesel owner will tell you the same—Murphys are built for heavy-duty service to deliver steady, more uniform power at more economical operation costs, with plenty of reserve for the heaviest demands. They start easier, run cooler, and deliver trouble-free service day after day.

Ask your Murphy Diesel Dealer about the profit advantages of Murphy power on your job.

407RD

MURPHY DIESEL

HEAVY-DUTY POWER for ROCK CRUSHING

Murphy Diesel engines and power units are available in sizes from 96 to 264 H.P. with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 64 to 165 K.W.

MURPHY DIESEL COMPANY

5315 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

Throughout the Nation

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MANUFACTURERS NEWS

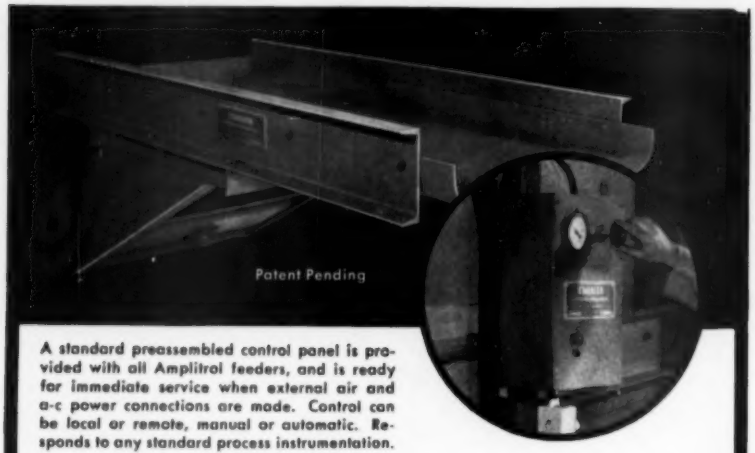
(Continued from page 192)

Quick-Way names officers

OFFICERS AND BOARD MEMBERS of Quick-Way Truck Shovel Co., Denver, Colo., were announced recently. Some changes have been made as the result of the truck-crane firm's agreement with H&B American Machine Co., Inc., Culver City, Calif., to combine operations. Top Quick-Way officers are R. C. Finkelstein, president; Gilbert S. Rigdon, executive vice president and Walter O. Lampl, vice president. Board members are Alfons Landa and R. C. Finkelstein of Quick-Way's parent firm, Penn-Texas Corp., New York City, and Gilbert S. Rigdon and David E. Bright of H&B.

Sturtevant Mill names Glynn chief engineer

ALFRED T. GLYNN has been named chief engineer of Sturtevant Mill Co., Dorchester, Mass., filling a post vacant since the death of Edward Ingle in October. Mr. Glynn, who has served as interim chief engineer prior to his appointment, joined Sturtevant in 1916.



A standard preassembled control panel is provided with all Amplitrol feeders, and is ready for immediate service when external air and a-c power connections are made. Control can be local or remote, manual or automatic. Responds to any standard process instrumentation.

Now! A Mechanical Vibrating Feeder With Variable, Stepless Control

The exclusive Carrier Natural-Frequency drive, and a unique new amplitude control system — these two features of the new Carrier Amplitrol feeder give you benefits found in *no other vibrating feeder,* electromagnetic or mechanical.

LESS DAMPING... Amplitrol feeders increase vibrating stroke *automatically* when headload is increased. This allows you to use larger bin openings . . . bigger headloads . . . and to discharge bigger capacities of almost any material.

FULL-RANGE CONTROL . . . A new, highly simplified pneumatic system allows accurate, full-range stroke control. The heavy-duty air springs respond *immediately* to a pneumatic signal from a standard 0-80 psi air pressure valve. No lag.

LESS MAINTENANCE . . . Amplitrol feeders have no chains or v-belts . . . no large revolving weights or bearings . . . no auxiliary electrical parts . . . no gears or guards . . . NEW AMPLITROL FEEDERS ARE JUST THAT SIMPLE.

Send for new 12-page bulletin describing all Amplitrol benefits in detail. Carrier Conveyor Corporation, 251-A North Jackson Street, Louisville, Ky.

CARRIER
~~NATURAL-FREQUENCY~~ VIBRATING EQUIPMENT
Engineering Specialists in Vibrating Equipment

CONVEY ● FEED
DEWATER ● SCREEN
COOL ● AGGLOMERATE
DRY ● SCALP ● COAT
DISTRIBUTE ● ELEVATE

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Hough's Gilbertson named president of CIMA

G. A. (GERRY) GILBERTSON, president of The Frank G. Hough Co., Libertyville, Ill., has been elected president of the Construction Industry Manufacturers Association. He had been first vice president last year after several years as a member of the board of directors. The CIMA represents 243 equipment and materials makers and publications serving the construction industry.

Mr. Gilbertson joined Hough in 1948 as vice president in charge of sales, advertising and service. In 1954 he became executive vice president and general manager; in 1956 he was named president.

Ford Truck names Ball

DONALD F. BALL is new manager of Ford Division's Heavy Truck Sales department. He succeeds John F. McLean, Jr., who has been named executive assistant to the regional sales manager at Ford's midwestern regional office in Chicago. Mr. Ball was supervisor of the heavy truck sales and engineering section and then supervisor of the sales engineering section of the Heavy Truck Sales department.

Anderson named Brockway's Cortland plant manager

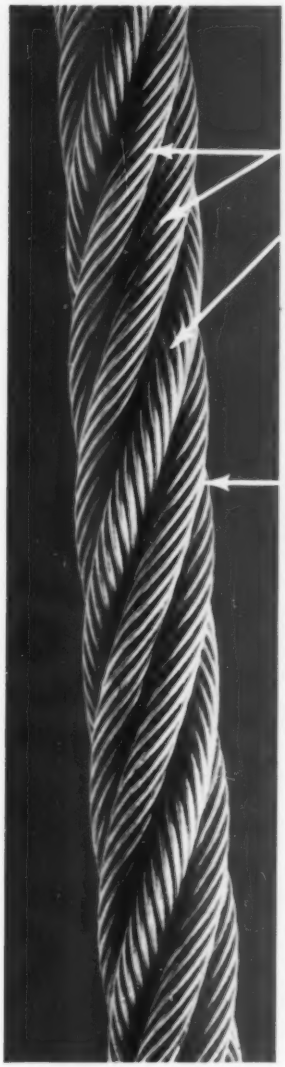
CHESTER W. ANDERSON is new plant manager of the factory of Brockway Motor Trucks, Division of Mack Trucks, Inc., Cortland, N.Y. He had been works manager of International Harvester's Fort Wayne, Ind., truck plant.

Mansbach named ad chief at Eimco Corporation

ALFRED F. MANSBACH has been named manager of advertising and sales promotion of the Tractor Division of The Eimco Corp., Salt Lake City, Utah. Mr. Mansbach has been vice president and director of Robert Luckie & Co., Inc., Birmingham, Ala., advertising agency.

Green gets Climax firm

A. P. GREEN FIRE BRICK Co., Mexico, Mo., announced that it has acquired Climax Fire Brick Co., Climax, Pa. Climax makes chiefly Pennsylvania-type refractories, including a small production of high and medium duty fire-clay brick. Its sales are expected to add 2.50 percent to Green's annual volume. *(Continued on page 200)*



Herringbone's two pairs of Lang lay strands and one pair of regular lay strands provide the ideal combination of maximum flexibility with good stability.

Finer wires inside contribute to Herringbone's excellent drum-winding characteristic.

Heavier outside wires in each strand have greater resistance to abrasion.

"... we would never hesitate to recommend it"

GRAY & FEAR, CONTRACTORS

This company continues: "We have been using your Roebling Herringbone* for about one year. We find it is one of the best ropes we have ever used, outlasting previous ropes three to one. It is good that such a reliable rope is available."

This is a direct field quote on the most remarkable development in wire rope in years . . . a new concept in wire rope design. Roebling Herringbone is the regular lay and Lang lay wire rope —two-ropes-in-one rope—combining the best features of both.

Herringbone delivers extra flexibility, extra abrasion resistance, unusual structural stability, extra resistance to shock, easy operation over sheaves and drums and smooth spooling properties.

We recommend Herringbone without reservation for general hoisting and the entire range of heavy-duty equipment. Your Roebling Distributor or Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, will give the full and fabulous details. *Reg. App. For

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

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PRESTRESSED!

Quaker Thermoid Conveyor Belting keeps rolling with the punches

Before it ever comes to you, the heaviest tension you'll put on Thermoid-Quaker Conveyor Belting has already been built in—and then released *after* curing. So the rubber and fabric are really in *compression* when you put the belting to work—ready for the toughest pull without overstraining the yarn or the cover.

There's a Thermoid-Quaker belting designed with just the combination of properties you need for each conveying job. To get the right belting for *your* needs, talk with the Thermoid industrial distributor nearest you, or write to *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Philadelphia 24, Pa.*

Notice how the special ply construction of Thermoid-Quaker "VICTOR" Belting provides greater flexibility at the edges—more shock-absorbing rubber where the worst beating occurs.

THERMOID DIVISION PORTER H.K.PORTER COMPANY, INC.

Divisions: Connors Steel, Delta-Star Electric, Disston, Forge and Fittings, Leschen Wire Rope, Mouldings, National Electric, Refractories, Riverside-Alloy Metal, Thermoid, Vulcan-Kidd Steel, H. K. Porter Company (Canada) Ltd.

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Enter 1522 on Reader Card

Six Marions Work Here

This 93-M 2½ yard shovel is one of six Marions which keep the rock rolling at a Pennsylvania cement plant.

Another 93-M, three Marion electric shovels built nearly 35 years ago and a Marion 362 diesel dropball complete the Marion equipment team at this busy operation producing in excess of a million tons a year.

The reasons why Marion is preferred equipment in many quarries, large and small, in many parts of the world deserve your investigation. Get the facts on today's Marion quarry machines - - today. Modern Marion electric quarry machines are available in sizes from 2½ to 10 yards.

CONSULT MARION MINING SPECIALISTS

for lowest costs on your property!

MARION POWER SHOVEL COMPANY - MARION, OHIO, U.S.A.

A Division of Universal Marion Corporation

MANUFACTURERS NEWS

(Continued from page 196)

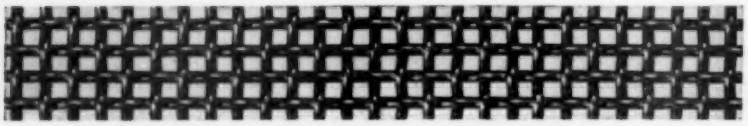
Mason heads Autocar sales

WALTER S. MASON has been named sales manager of the Autocar Division of the White Motor Co., Exton, Pa., to succeed Harry L. White, who is retiring. After joining Autocar in 1944 as a sales representative, Mr. Mason became district sales manager, regional representative and finally assistant to Autocar general manager Karl A. Roesch.

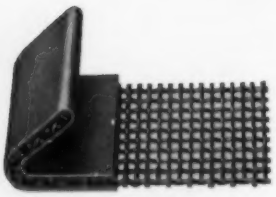
Mr. White has been with the firm 40 years as branch manager, district manager, then vice president of Autocar sales and service. He was named sales manager in 1954, when Autocar became a White Motor Co. division.

Chandler and Dickerson get new Koehring posts

K. R. CHANDLER has assumed the newly created post of assistant vice president of sales for the Koehring Division, and William B. Dickerson is new sales manager for the division of Koehring Co., Milwaukee, Wis. Mr. Chandler has been an engineering trainee, district representative, service manager and was made assistant sales manager in January, 1958. A native of Brooklyn, Wis., he holds a B.S. degree in civil engineering from the University of Wisconsin. Mr. Dickerson worked in field sales on the west coast and in the northwest for another construction equipment maker before joining Koehring.



TYLER SCREENS LAST LONGER

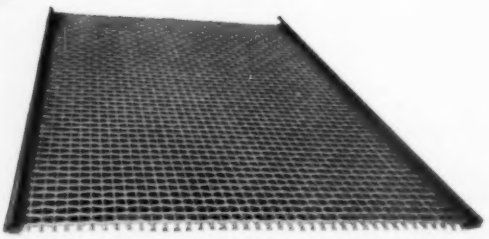


Tyler Type "AX" Hook Strip. For wire diameters from .047" to 5/16" inclusive.

Tyler Type "CX" Hook Strip. For wire diameters .041" and smaller.

Tyler Woven Wire Screens are woven with laboratory approved wires on precision machines. The high quality of Tyler Screens is apparent in their long life and service under the most difficult of screening conditions.

Tyler Screen Sections are furnished for all makes of vibrating screens in all meshes and metals. Each section is fabricated with the right type of edge or hook strip for the specification of screen cloth and to fit the particular make and model of screening machine on which it will be used.



Telephone HE 1-5400 • *Teletype* CV 586

THE W. S. TYLER COMPANY

CLEVELAND 14, OHIO

Manufacturers of Woven Wire Screens and Screening Machinery

Enter 1416 on Reader Card

AC's Agthe named "Engineer of the Year"

FRED T. AGTHE, a consulting engineer for the Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has been named "Engineer of the Year" by the Engineering Society of Milwaukee. He has engineered cement plants around the world and currently acts as a consultant on certain projects and as advisor to recent engineering graduates hired by his firm. Mr. Agthe, 73, is a former president of the Wisconsin Society of Professional Engineers.

Cincinnati Rubber names Shakespeare vice president

WILLIAM V. SHAKESPEARE, assistant to the president since 1956, has been elected a vice president of the Cincinnati Rubber Manufacturing Co., Cincinnati, Ohio, a division of Thor Power Tool Co., Aurora, Ill. Before moving to the rubber firm's executive staff in 1956 when Thor acquired it, Mr. Shakespeare worked for 20 years in Thor export sales.

WEMCO's Mayer named AED vice president

H. J. MAYER, executive vice president of the Western Machinery Co., San Francisco, was recently elected vice president of the Associated Equipment Distributors. He had been AED regional director. Western Machinery is a manufacturer of aggregates processing machinery and a distributor of construction equipment.

Koehring buys drill firm

PURCHASE OF the Stardrill-Keystone Co., Beaver Falls, Pa., has been announced by Koehring Co., Milwaukee, Wis. The Pennsylvania firm makes drills and rigs for quarry and other uses, producing about $4-million worth annually. Its rotary and percussion drills will supplement the line Koehring acquired in May, 1958, with the purchase of Ka-Mo Tools, Inc., Cicero, Ill., which manufactures earth-boring equipment. END

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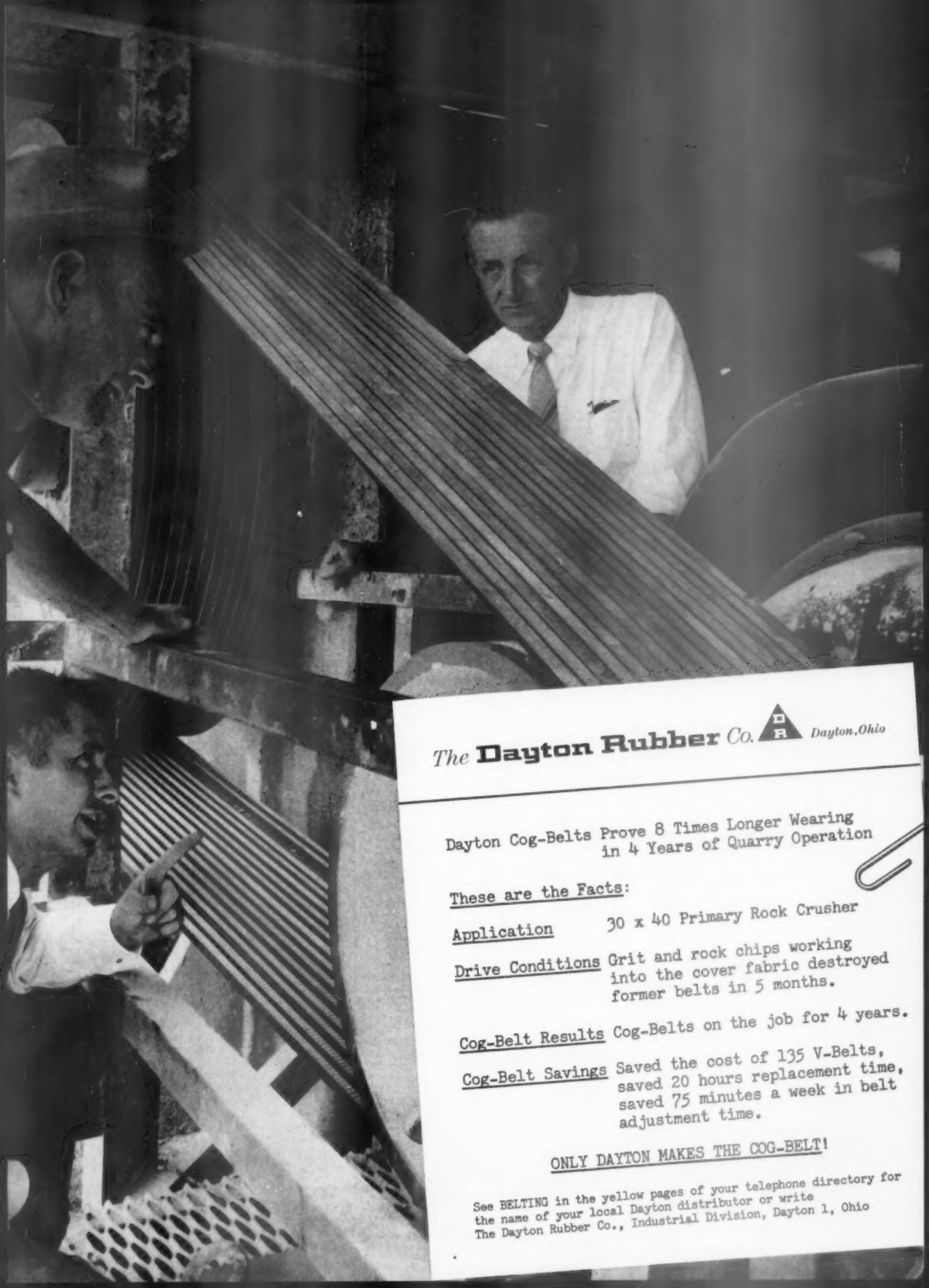

The **Dayton Rubber** *Co.* *Dayton, Ohio*

Dayton Cog-Belts Prove 8 Times Longer Wearing in 4 Years of Quarry Operation

These are the Facts:

Application — 30 x 40 Primary Rock Crusher

Drive Conditions — Grit and rock chips working into the cover fabric destroyed former belts in 5 months.

Cog-Belt Results — Cog-Belts on the job for 4 years.

Cog-Belt Savings — Saved the cost of 135 V-Belts, saved 20 hours replacement time, saved 75 minutes a week in belt adjustment time.

ONLY DAYTON MAKES THE COG-BELT!

See BELTING in the yellow pages of your telephone directory for the name of your local Dayton distributor or write The Dayton Rubber Co., Industrial Division, Dayton 1, Ohio

WHERE TO BUY

Rock Products Classified Advertising

— Where to Buy —

Forms close 12th of Month Preceding Publication

Mail to: **ROCK PRODUCTS**, Where To Buy Dept., 79 West Monroe St., Chicago 3, Illinois

DATE _____

ADVERTISER _____

BY _____

ADDRESS _____

CITY, ZONE & STATE _____

Remittance Enclosed
Terms: 10 days after receipt of invoice

RATES FOR ONE INSERTION

Column Inches Used	Rate Per Column Inch
1- 3	$9.00
4- 8	8.60
9-14	8.40
15-19	8.20
20-30	7.80

Lower rates on a contract basis. Write for rate card.

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Box Numbers will be assigned to ads without extra charge, if the advertiser desires. Inquiries should be sent to the Box Number c/o Rock Products, 79 W. Monroe St., Chicago 3, Ill. They are forwarded daily to the advertiser. Rock Products cannot disclose advertisers' name or answer inquiries.

LIQUIDATION

TWO COMPLETE BRIQUETTING PLANTS

Locust Summit, Pa. and St. Nicholas, Pa.

4—Ruggles-Coles Class #XA-18 double shell indirect-direct heat rotary dryers, 104" x 70' x ⅝" welded steel outer shell.

4—Komarek-Greaves briquetting presses, 75 HP, 25 tons per hour.

4—Komarek-Greaves vertical fluxers (paddle mixers), triple shaft, 150 HP.

4—K-G Horiz. Fluxers 41" dia., 50 HP.

4—K-G Pug Mills, 30" dia. x 14'4" long.

8—Tyler Screens, 4'x8', 4'x6'.

2—42" wide travelling-screen cooling conveyors, total of 950'

2—8'6" dia. x 70' long rotary hot air dryers.

4—36" x 24", 24" x 18" Jeffery hammermills, 50 HP, 25 HP.

3—Robinson Size #13 Sawtooth Crushers.

4—Pa. Crusher #C-3-30 hammermills, 60 HP.

20—Welded Steel bins, cone bottom, from 15,000 gallon to 90,000 gallon sizes.

4—Keeler Boilers 200 HP, 160 PSI.

8—16", 18" and 24" trough-belt conveyors, 100', 250', 500' long.

6—36" & 48" wide apron feeders, 8' long.

8—Bucket elevators, 62' and 90' c-c.

6—500 KVA Transformers.

300—Motors and controls, 1 HP to 150 HP.

ALSO—Chain hoists, steel pipe, valves, hoppers, blowers, misc. equipment, etc.

BUILDINGS—(2) All Steel Buildings 50' wide x 198' long, 60' high under roof trusses, clear span.

REAL ESTATE—7.8 Acres at Locust Summit, Pa. 6.0 Acres at St. Nicholas, Pa. Served by Reading Railroad—With Private Tracks

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PERRY EQUIPMENT CORP.
1418 N. 6th St.
Philadelphia 22, Pa.
Poplar 3-3505

HEAT & POWER CO., INC.
60 E. 42nd St.
New York 17, N.Y.
Murray Hill 7-5280

4—6 x 14 Simplicity **VIBRATING FEEDERS.** **HYDRATED LIME PLANT** 50 tons per day. 35—Link Belt 10" **SCREW CONVEYORS** 10½'. Barber Greene 840 & 848 **ASPHALT PLANTS.** **CRUSHING PLANTS:** C. R. Jr. Tandem & Pitmaster; 38-V Pioneer; Iowa 1036, 1836 & 2036; Iowa 3030 Impactor. **SYMONS** 2', 3', & 4'. 3036 Dixie & 4033 C. R. **HAMMERMILLS.** 54" Stedman. **SHOVELS:** 54-B electric. Lima 802. Koehring 605, N. W. 25. Many others.

Crushers: jaw; cone; gyratory; roll; hammermill; impactor; ball, rod & tube mills; screening, washing & crushing plants—Classifiers—Compressors—Conveyors—Cranes—Drills—Dump Cars—Dredges—Engines & Motors—Feeders—Generators—Hoists—Kilns & Dryers—Locomotives—Pumps—Screens—Shovels & Draglines—Transformers—Euclid Trucks.

EQUIPMENT LIST SENT ON REQUEST

STANLEY B. TROYER EQUIP. CO.
Box 97 — Phone 500 — Crosby, Minnesota

FOR SALE--2 LEFT

15 Ton Euclid Rear Dumps

6 Model 82FD's, GM 6-71, 218 HP Engine, 5 Speed Transmission, Standard Bodies with Jalloy Liners, Top Extensions. Little Use; These Units Are In Excellent Condition and Must Be Seen To Be Appreciated. s/n 14534; 14554; 14555; 14783; 14821 and 14822.

Price F.O.B. Nashville $14,500.00 Each

EUCLID-TENNESSEE, INC.
Box 1176 Nashville, Tennessee
Phone—ALpine 6-1648

LIQUIDATION

TITANIUM DIOXIDE PLANT

Broening Highway - Baltimore, Md.
Telephone: MEdford 3-2911

1—Traylor 11' x 155' Rotary Kiln, 2 tires, welded, ⅞" shell.

1—Vulcan 8' x 125' Rotary Kiln, 2 tires, ¾" shell.

2—Vulcan 8' x 50' Rotary Kilns, 2 tires, welded, ⅞" shell.

2—Vulcan 6' x 60' Rotary Kilns, 2 tires, ¾" shell.

2—Abbe 5' x 16' Ball Mills.

1—Mikro Pulverizers, 3TH.

5—Worthington, I.R., Compressors; 1000, 500 & 300 cfm.

2—Aurora 24" Vertical Centrifugal Pumps, 200 HP motors, 5000 gpm, 125' head.

1—Byron Jackson Deep Well Pump, 75 HP Vertical Motor.

8—Dorr Thickener Mechanisms; 50', 40', and 16'.

Steel Buildings; 20 ton Overhead Cranes; Bemis 50 lb. Bag Packer with Sewing Machine; Bucket Elevators 65 to 125 ft. high; Redler Conveyors 5" and 10"; Screw Conveyors 6" and 9", etc.

PARTIAL LIST OF VALUES
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REPRESENTATIVE ON PREMISES FOR INSPECTION

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GOOD EQUIPMENT at Reasonable Prices

DRYERS: Louisville Stainless 30"x28'; Rotary Oil Fired Dryer S/S 50"x20'; Procter & Schwartz S/S/Apron Dryer; 8'x9'x34½ complete

CENTRIFUGES:BIRD continuous conical; 18"x28" and 24"x38"

FILTERS: Sweetlands No. 2 to 12 complete; Eimco 8'x8' Rot. Vac.; Oliver Dorrco Rot. Vac. Filter, 6'x3'; nickel;

COOLERS: Fuller S/S Pulv. Materials Coolers 12" Dia. x 10' long

KILNS: Refractory Lined 41"x15'; 7'x35'; 11'x155' and other sizes

BALL TUBE MILLS; 3'x10', 4'x16', 5'6"x22'; 6'x22' State your needs

WILLIAMS Lab. Roll Mill 3 Roll; 10" Ring; compl. Dbl. Cone Vac. Classifier

SCREENS-SIFTERS: J.H. Day Tyler-Hummer; Rotex etc. Big selection of sizes.

BRIQUETTING PRESSES.

CRUSHERS-PULVERIZERS: Jaw, Cone, Roll, Gyratory Hammer Mills, Mikros etc.

FIRST MACHINERY CORP.
209-289 Tenth St. Bklyn. 15, N.Y.
STerling 8-4672

OUR 51ST YEAR

Stone Conveyor 48" x 150', Idlers, Belt, Terminals, 50 HP Gearmotor, No Frame.
24" x 115' Truss Type Conveyor.
Conveyor Belt 24" & 30"—Almost New.
Conveyor Idlers—All Sizes and Makes.
Steel Grating for Walkways, 95% New.
Sturtevant 8" x 40' Enclosed Elevator.
Small Dust Elevators for Asphalt Plants, 5" and 6" Buckets.
New Holland Plate Feeder 24" x 60".
F44 Syntron Feeder and Controls.
Niagara 4x10 Single Deck Screen.
Niagara 2½ x 12' Single Deck Screen.
Seco 3x8 Triple Screen, 5 HP TEFC
Seco 3½ Deck 3x8 Screen.
Revolving Screen 30" x 19' Lg., 4 Sizes.
Revolving Screen 48" x 20', Trunnions.
New Universal Screens in Stock.
Link-Belt D12 Herringbone Reducer
Link-Belt D8 Herringbone Reducer
Link-Belt WB60 Reducers.
50 H.P. 100 R.P.M. Gear Motors.
25, 30, 40 and 50 H.P. Motors.
Farrel 10x4 "C" Jaw Crusher w/motor.
New England 14" x 28" Jaw Crusher
Sturtevant #1½ Rotary Crusher.
McLanahan & Stone Single Roll 24" x 30".
Single Roll Coal Crusher 24" D. x 30" F.
Acme Jaw Crusher 9" x 16".
Cedar Rapids 25 Yd. Secondary Portable Crushing Plant.
Butler Portable Bulk Cement Plant with 70 Yd. Hopper, 250 BBL Elevator, Weigh Batcher, Scales, Vibrators, Etc.

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Air	Discharge	Suction
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Pile Driver	Gasoline	Road Builders

BELTING

Conveyor Elevator Grader Chute Lining Hot Material Mucker V-Belts Transmission

CARLYLE RUBBER CO., INC.
103-107 Warren St., New York 7, N. Y. Digby9-3810

PROMPT SHIPMENTS LOW COST QUALITY PRODUCTS

CONCRETE MIXING PLANTS and Aggregate Handling Equipment.
COMPRESSORS: Ingersoll Rand PRE-2, capacities 1700, 1800, 3000, 4500 CFM @ 100 lbs., Synchro motors, direct connected, 2200 volt, 3 phase, 60 cycle, with all auxiliary equipment.
LOCOMOTIVES: 25, 44 and 80 ton, diesel electric, standard gauge.
CAR DUMPER: Link Belt, standard railroad gauge, Rotary type, 63 ft. transfer table.
SCREW CONVEYORS: 16" screws, 50 ft. and 76 ft. long; one 12" screw, 50 ft. long; all with 440 volt, A.C. motors.
BUCKET ELEVATORS: Boot type fully enclosed, buckets 8 x 16 on 111 and 132 chain, 36 ft., 98 ft. high, boots 4'10" x 2 ft., motors 220/440 volt A.C.
OVERHEAD ELECTRIC TRAVELING CRANE: 80 ft. span, 15 ton capacity, 4 motor, bucket operating, cab control, 440 volt, 3 phase, 60 cycle. One 25 ton, 56 ft. span, direct current.
PIPE: 3000 ft. 8½" O.D. standard line pipe, 18 ft. and 24 ft. lengths.
JAW CRUSHERS: Buchanan type C, all steel, 30 x 42" with motor and drive. Allis Chalmers 42 x 40 and one all steel type A-1 size 42 x 32". One Farrel type B size 42 x 30" and one 36 x 15".
CLASSIFIER: Dorr Bowl and Rake 19' x 8' x 37'6", new condition.
AIR SEPARATORS: Raymond 5'6" Whizzer Air Separator. Sturtevant and Gayco 14 ft. and 16 ft.
SHOVELS, ELECTRIC: Bucyrus Erie 120-B, 5 yd. capacity and 170-B, 6½ yd. capacity.
BUCKET: Williams 1¼ yd. clam shell, material handling.
MOTORS & CONTROLS for Mine Hoist service: 150, 200, 250, 300, 450, 600, 700 and 1500 H.P.

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KILNS—COOLERS—DRYERS

7' x 60' Bonnot Rotary Dryer
8' x 70' Ruggles-Cole Rotary Dryers
8' x 115' Vulcan Rotary Kiln
8'x100' Reeves Rotary Kilns
11' x 155' Traylor Rotary Kiln
6' x 50' & 6' x 25' Rotary Dryers
705-24, 502-16 Roto Louvre Dryers

MILLS—PULVERIZERS—CRUSHERS

Jeffrey Hammermills 15"x8" to 36"x24"
Pennsylvania C-3-30 Hammermill 60 HP
Dixie Jr. 2424 Non-Clog Hammermill
Williams 60GA Hammermill 300 HP
Diamond 30"x42" Jaw Crusher 125 HP
Raymond Screen Mills #00, #0000
Raymond #6669 High Side 6 Roll Mill
Hardinge 10'x48" & 8'x30" Conical Mills
Kennedy 3'6" x 7' Rod Mill
Tube Mill 6'6" x 21'—350 HP Synch.
30" x 14' & 40" x 13' Pug Mills

MISCELLANEOUS

Clyde Hydrator #3 complete
18"x16'; 36"x6'; 48"x8' Apron Feeders
24" x 18' Pan Feeder
60' to 90' Centers Bucket Elevators
2000'—16"; 18"; 24" Belt Conveyors
4'x6' & 4'x8' Tyler Hummer Screens
15 to 200 ton cap. Steel Bins
10 ton Gas/Elec. Locomotive 36" ga.
25 ton Diesel/Elec. Locomotive 36" ga.

Write for Detailed Booklet

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ROCK PROD. EQPT. DIV.
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BONDED QUALITY BARGAINS

NEW CURRENT MODELS - IMMEDIATE SHIPMENT FROM OUR FACTORY - WRITE, WIRE OR PHONE FOR FREE CATALOG AND PRICES

BONDED® TROUGHING IDLER CONVEYOR BARGAINS

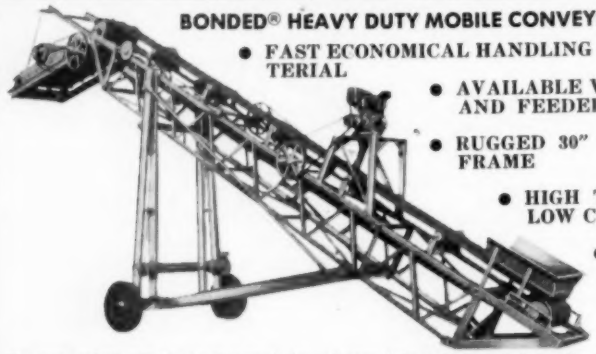
Remember, You Save Up To 50%

CONVEYOR PRICES INCLUDE BELTING

Complete Pre-Fab sections of 8" Jones & Laughlin Jr. I Beam Frame Conveyors quickly and easily joined together on the job. These beams are rolled with .20% Copper Content. Atmospheric exposure tests disclose that Junior Beams, with .20% Copper have as much as four times the resistance to corrosion as non-copper steels. Braced with structural angle, welded to frame for maximum rigidity. Equipped with 5" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley, mounted on 2 1/16" or 2 7/16" diameter shaft.
We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck, 1/8" top rubber cover x 1/32" bottom cover Major grade belt and is Fresh Stock made by leading manufacturers. WRITE FOR BULLETIN #1138.
Bonded troughing idler conveyors also available in Truss Frame Construction. WRITE FOR BULLETIN #1189 AND PRICES.

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Ft.
14"	25'	$1397	$ 738	
14"	50'	2222	1159	$16.84
14"	85'	3377	1748	
16"	20'	1262	667	
16"	45'	2137	1118	
16"	80'	2662	1388	18.04
16"	90'	3712	1930	
18"	25'	1477	797	
18"	45'	2217	1182	
18"	70'	3142	1663	
18"	85'	3697	1952	19.24
18"	100'	4252	2240	
18"	130'	5362	2817	
20"	25'	1517	835	
20"	60'	2882	1548	
20"	75'	3467	1854	20.27
20"	90'	4052	2159	
24"	25'	1590	898	
24"	45'	2430	1334	
24"	70'	3480	1878	
24"	100'	4740	2532	21.78
24"	120'	5580	2967	
24"	150'	6840	3621	
30"	50'	2911	1617	
30"	70'	3871	2112	24.75
30"	90'	4831	2607	
36"	25'	1818	1118	
36"	45'	2858	1677	
36"	60'	3638	2096	27.95
36"	100'	5718	3214	

BONDED® HEAVY DUTY MOBILE CONVEYORS



- FAST ECONOMICAL HANDLING OF BULK MATERIAL
- AVAILABLE WITH SCREEN AND FEEDER
- RUGGED 30" DEEP TRUSS FRAME
- HIGH TONNAGE AT LOW COST
- EQUIPPED WITH TOW HITCH

The economical solution to the need for a heavy duty conveyor that can be readily moved from one job-site to another. Available with mast or mastless type undercarriage and hydraulic powered mechanism. All standard conveyor accessories can be used. Lengths to 60 feet and belt widths through 30 inches.
Priced from $2365.00

BONDED® QUALITY BUILT BUCKET ELEVATORS

ENCLOSED ELEVATOR

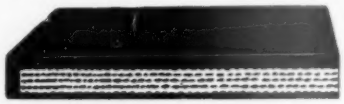
Open or Enclosed, Vertical or Inclined Bucket Elevators with Continuous or Spaced Buckets mounted on Chain or Belting. Bonded's 19 standard models are designed for low cost, high capacity elevating of practically all bulk materials. Open and other types priced on request. There is a style of bucket for virtually every material or condition: wet or dry, lumpy or fine, granular, slivery, or pellet shapes, hot or chemically active.
Prices listed at right are for Vertical Enclosed Elevators. Standard Elevators with Chain mounted buckets use #477 or #C102B combination chain. 4, 5 and 6 ply, 32 oz. or 35 oz. duck belt is used on Belt mounted Bucket Elevators.
Bonded Bucket Elevators are Jig Built to insure easy Job-Site Installation.

Model No.	Bucket Size Inches	First 20' (Discharge Ht.)	Add or Deduct Per Ft.
Style "A" Spaced Malleable Buckets on Chain			
C53A	5x3 1/2	$1071.50	$20.25
C64A	6x4	1088.50	21.00
C85A	8x5	1235.00	25.50
C106A	10x6	1281.00	27.50
C127A	12x7	1510.00	31.25
C148A	14x8	1673.50	36.00
Style "A" Spaced Malleable Buckets On Belt			
B53A	5x3 1/2	$1099.00	$20.50
B64A	6x4	1116.50	21.25
B85A	8x5	1311.50	27.25
B106A	10x6	1692.50	33.00
B127A	12x7	1854.50	37.25
Style "E" Continuous Steel Buckets On Chain			
C85E	8x5x 7 3/4	$1397.00	$31.25
C126E	12x6x11 3/4	1599.00	34.25
C108E	10x8x11 5/8	1604.00	34.75
C128E	12x8x11 5/8	1624.00	35.50
C148E	14x8x11 5/8	1710.00	36.75
Style "E" Continuous Steel Buckets On Belt			
B85E	8x5x 7 3/4	$1727.50	$34.50
B116E	11x6x 8 5/8	1839.50	38.75
B128E	12x8x11 5/8	2013.00	43.50

A complete line of parts and accessories available to build your own Bucket Elevators. Continuous Steel, Salem Steel and Malleable Iron Buckets available in a wide variety of sizes, shapes, gauges and styles at low prices. WRITE FOR BULLETIN #1203 AND PRICES DESCRIBING COMPLETE LINE OF BUCKET ELEVATORS AND BUCKETS.

NEW CONVEYOR BELTING SAVE UP TO 34%

WE PAY FREIGHT ON 200 POUNDS OR OVER



QUALITY TESTED CONVEYOR BELTING*

Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile.

Heavy Duty 4-ply, 28-oz. duck, 1/8" top rubber cover x 1/32" bottom rubber cover belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

Width	Ply	List Price	Sale Price
14"	4	$3.63 ft.	$2.83 ft.
16"	4	4.08 ft.	2.97 ft.
18"	4	4.51 ft.	3.29 ft.
20"	4	4.97 ft.	3.80 ft.
24"	4	5.85 ft.	4.26 ft.
30"	4	7.18 ft.	5.21 ft.
36"	4	8.51 ft.	6.18 ft.

Major Bee Brand: 16# to 19# Average Friction Pull, 2400# to 3000# Average Cover Tensile. Skim coat between plies.

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, 1/8" top rubber cover x 1/32" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

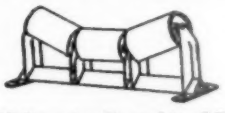
Width	Ply	List Price	Sale Price
14"	4	$ 4.31 ft.	$3.06 ft.
16"	4	4.85 ft.	3.46 ft.
18"	4	5.39 ft.	3.83 ft.
20"	4	5.90 ft.	4.37 ft.
24"	4	6.94 ft.	4.94 ft.
30"	4	8.53 ft.	6.07 ft.
36"	4	10.09 ft.	7.35 ft.
24"	5	8.14 ft.	5.78 ft.

***All belting is tested by the Engineering laboratory of one of the largest universities in the United States. It is guaranteed to meet or exceed listed specifications.**

Other widths, plies, duck weights and cover thickness available at low prices.

WRITE FOR FREE SAMPLE & BULL. #1234

BONDED® IDLERS AND RETURN ROLLS SAVE 25% AND MORE



3-roll, 5" diameter Troughing Idlers for:			
14" belt	$19.75	24" belt	$22.75
16" belt	20.50	30" belt	23.85
18" belt	21.90	36" belt	24.90
20" belt	22.10	48" belt	27.50

1-roll, 5" diameter Return Idlers for:			
14" belt	$7.25	24" belt	$ 8.50
16" belt	7.50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well-known makes. Furnished with replaceable prelubricated sealed ball bearings. Maintenance is negligible. WRITE FOR BULLETIN #1138.

BONDED SCALE AND MACHINE COMPANY

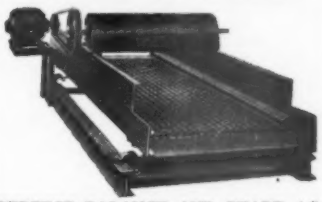
PHONE Days: Hickory 4-2186 — WRITE FOR FREE CATALOG AND PRICES — PHONE Evenings: AX. 1-2213, HU. 6-3156

128 Bellevue — Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders — COLUMBUS 7, OHIO

BONDED® VIBRATING SCREENS

PROMPT SHIPMENT OF ALL MODELS

GENERAL DUTY SCREENS

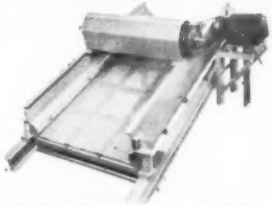


PERFECT BALANCE AND SHARP ACTION. Eccentric weight mechanism, spring mounted. 1 to 3 decks, 2' x 4' to 3' x 8'. **WRITE FOR "SEVEN SECRETS OF SUCCESSFUL SCREENING" IN BULLETIN NO. 1086.**

For the accurate and economical screening of sand, gravel, crushed stone, ores, broken rock, slag, clay and cement products and lightweight aggregates. All Bonded Screens built of structural steel, welded and reinforced with additional members on all points of strain and factory tested and balanced. Available in enclosed models where dust and flying particles need to be contained. For almost any type of screening operation, wet or dry.

Priced from $443

SPECIAL SERVICE SCREENS



WRITE FOR BULLETIN #1224 **TYPE C**

For scalping middle-range pieces and accurate sizing of fines and above listed products but where quantity and feed do not warrant a larger capacity, heavy duty model. Medium to heavy construction. Can also be suspended from four steel cables and springs for portable or temporary installation. Vibration remains in working screen body. No shaking of tipple, building or platform.

Priced from $487

HEAVY DUTY SCREENS

FACTORY BALANCED, CONTROLLED VIBRATION. Four bearing positive throw eccentric shaft; 3' x 6' to 5' x 14'. 1 to 6 decks. **WRITE FOR BULLETIN NO. 1087 AND 9 REASONS WHY BONDED IS YOUR BEST BUY.**

For high tonnages, heavy scalping and multiple sizing of such minerals and industrial products as handled by above models. No dead spots. Springless live-rubber mounting of screen body controls vibration. Screen cloth and plate in all models reversible for longer life. Their finished edges prevent plates from splitting and cloth from ravelling.

Priced from $1620

BONDED SCALE AND MACHINE COMPANY

128 BELLEVUE COLUMBUS 7, OHIO

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QUARRY EQUIPMENT

Cedarapids 4A, 2540 Jaw Portable Primary.
Cedarapids 3020 Single Impeller Portable Crushing Plant.
Cedarapids 1238 Twin Jaw Portable Crushing Plant.
Cedarapids 1236 Twin Jaw Crusher.
Cedarapids 6C, 1236 Twin Jaw Portable Secondary.
Cedarapids 3B, 1036 Jaw Portable Crushing Plant.
Cedarapids 1036 Jaw Crusher.
Cedarapids 3033 Hammermill new condition
Cedarapids 3033 Hammermill secondary on rubber.
Cedarapids 2033 Hammermill. Slightly Used.
Telsmith 36" Gyrasphere Crusher.
26" x 8'4" apron feeder with drive.
Robins 4' x 9' triple deck screen.
Syntron F45 vibrating grizzly feeder.
New Holland 4' x 12' double deck screen. Rebuilt
Cedarapids DDD units with 4' x 12' 2-deck screens on 8' x 18' 2-compartment bins, connecting elevator.
Cedarapids 30-S, 3-compartment Charging Hopper, Apron Feeder, Bucket Elevator. New.
Smithco 10' x 10' single compartment bin.
Pioneer 4' x 8' double deck screen. Rebuilt.
27½ ton, single-compartment 8' x 12' bin.
1—Eagle 36" x 20' Double Log Washers. Good.
Wemco 24" x 13' Sand Preparation Machine.
60-ton, two-compartment, 8' x 18' storage bin with clam gates.
100-ton, two compartment, 13' x 23' bin
Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also conveyor belting.

SHOVELS AND CRANES

Lorain L-820, 2-yd. Diesel Shovel-Crane.
P & H 855B-LC, 2-yd. diesel dragline.
P & H 655B 1½ yd. diesel dragline reconditioned.
Lorain L-79, 1½-yd. diesel shovel rebuilt.
Bucyrus-Erie 38B, 1½-yd. Diesel Dragline.
Lorain L-26, ¾-yd. Diesel Dragline. Excellent.
Lorain L-25A, ¾-yd. Gas Backhoe.
Lorain L-25K, ¾-yd. Gas Crane.
Koering 304, ¾-yd. Diesel Shovel-Backhoe.
P & H 255A, ¾-yd. Diesel Clam-Crane.
Lima 34 Paymaster ¾-yard diesel shovel. Good
Unit 1020 ¾-yard diesel powered shovel-crane
Unit 614, ½-yd. Diesel Backhoe.
Unit 614, ½-yd. Gas Backhoe.
American 100, ½-yd. Gas Clam-Backhoe.
Lorain TL-20, ½-yd. Diesel Backhoe.
Lorain MC-414 20-ton Moto-Crane reconditioned.
Link Belt HC-90 25-ton truck crane
Michigan TLDT-20, 20-ton Truck Crane
Lorain MC-4 15-ton Moto-Crane.
Lorain MC-110, 10-ton Gas Moto-Crane
Lorain SP-107, 7-ton self-propelled crane

TRACTORS, TRUCKS, SCRAPERS, ETC.

6—Euclid 18-yd. overhung engine scrapers.
2—Euclid 12-yd. overhung engine scrapers.
1—Euclid 7-yd. overhung engine scraper.
1—Euclid 15½-yd. six wheel scrapers.
2—Euclid 13-yd. bottom dumps. Good.
2—Euclid TC-12 twin engine tractors.
1—Euclid 18FD, 15-ton rear dump.
1—Mack LRS 15-ton rear dump. Rebuilt
1—Pullman S-600, 6 to 8 yard scraper.
1—Caterpillar DW-10 hydraulic scraper.
1—International TD-14A tractor with PCU
1—International TD 18 with cable bulldozer
1—Euclid tractor with 3200 gallon water tank
1—Cat. D-7 with Hydraulic Angledozer Blade.
1—Cat. D-6 with hydraulic angledozer blade.
1—Caterpillar D-4 Tractor only
1—Internat'l. 300 tractor, with loader backhoe.
1—Allis-Chalmers HD-19 with cable bulldozer
1—LaPlante choate 13½-yd. Cable scraper
1—Atco H85, 10½-yd. Hydraulic scraper
1—Hough Hr, 1-yd. Gas Front End Loader.

SHOVEL ATTACHMENTS

Lorain 82 or 820, 2-yd. 23' boom, 20' stick
Lorain 50, 1-yd., 21' boom, 17' stick
Lorain 30A, ½-yd., 16' boom, 13'4" stick.
Osgood 903, 2-yd., 24' boom, 20'6" stick.

BACKHOE ATTACHMENTS

Lorain 30 or 40, 16' Boom, 7' Stick, 44" Bucket.
Koehring 304, ¾-yd. 19' boom, 5' stick.

DIESEL POWER UNITS

Cat. D7700, 74 H.P. at 1000 RPM. Rebuilt
Cat. D8800, 88 H.P. at 1000 RPM.
Cat. D1000, 128 H.P. at 1000 RPM. Rebuilt.
GM 3021C, 3-cylinder. new.
GM 671, 6-cylinder, rebuilt.
GM Twin Diesel, rebuilt.

GENERATOR SETS

Universal 5KW, 1200 RPM, D.C., 220-250 Volts.
Century-Waukesha 15 KW, 1200 RPM, 3/60/127-220.
Century-Continental 15KW, 1200 RPM, 3/60/120-208.
Cummins 25KW, 1200 RPM, 3/60/120-208.
Caterpillar 40KW, 1200 RPM, 3/60/220-440

AIR COMPRESSORS

105 cu. ft. LeRoi tractair with dozer, backhoe.
2—105 cu. ft. Ingersoll Rand Gas Portable.
3—125 cu. ft. Gardner-Denver Gas Portables.
125 cu. ft. Jaeger gas portable.
210 cu. ft. Schramm gas portable.
210 cu. ft. Gardner-Denver Diesel Portable.
315 cu. ft. Schramm gas portable.
500 cu. ft. Ingersoll-Rand. Waukesha power
3—600 cu. ft. Gardner-Denver diesel portables.

L. B. SMITH, INC.

Camp Hill, Pa.

Phone Harrisburg REgent 7-3431

LIQUIDATIONS

PENNSYLVANIA

1—Vulcan 10' x 8' x 125' Rotary Kiln
3—Vulcan 8' x 125' Rotary Kiln
1—Vulcan 8' x 90' Rotary Dryer
2—Vulcan 7' x 55' Rotary Dryers.
2—Traylor 7' x 27' Compeb Mills, 600 HP motors.
2—Raymond 18' & 14' dia. double whizzer Separators.
4—Raymond two roll Bowl Mills, 60 HP motors.
3—Bradley three roll Pulverizers, 250 HP motors.
3—Bucket Elevators 60' centers, 8" x 16" buckets.
2—Ruggles Cole 90" x 55' Rotary Dryers.
2—Herreshoff Furnaces, 20' dia. 16 hearth
1—Herreshoff Furnace, 16' dia. 10 hearth.
2—18" Belt Conveyors 28 to 60' long.
6—Bucket Elevators 20 to 65' high.
2—Roll Crushers 54" x 24".
6—Steel Bins; 1, 5, 6 & 7 Compartment, 1100 to 12,000 cu. ft.
Steel Buildings; Structural Steel; Overhead Cranes; Screw Conveyors; etc.

ILLINOIS

1—Vulcan 8' x 115' Rotary Kiln.
1—Ruggles Cole 5' x 30' Double Shell Rotary Dryer.

OTHER LOCATIONS

4—Herreshoff Furnaces 13'6" dia. 6 hearth.
1—Link-Belt Roto Louvre 7'5" x 24' Rotary Dryer
1—5' x 50' Rotary Kiln.
1—Allis Chalmers 9' x 130' Rotary Kiln.
2—Vulcan 7' x 80' Rotary Dryers.
1—6' x 50' Rotary Dryer, ⅜" shell.
1—5'6" x 50' Rotary Dryer, ⅜" shell.
1—3' x 30' Rotary Dryer, $\frac{5}{16}$" shell.
3—Link Belt Roto Louvre Dryers; 6'4" x 24', 3'10" x 20', 3'10" x 16'.
1—New Penn. Non-Clog Hammer Mill, size no. 5060.
5—Jaw Crushers 12" x 18" to 36" x 48".
2—Gayco 8' dia. Air Separators.
1—Gayco 5' dia. Air Separator.

For inquiries on Boilers, Diesel Generator Sets, Turbo Generator Sets, Steam Engines, write to our Department P.

Your Inquiries Solicited—Send For Circulars

BRILL EQUIPMENT COMPANY

2401 Third Ave., New York 51, N.Y.

Tel: CYpress 2-5703

SPECIAL ITEMS

C-R 5530 Twin roll, 200 HP elec. motor.
Iowa 52"x60" dbl. Impact hammermill
Traylor 56"x72" sectional frame jaw crusher
Traylor 4' Model TY crusher. Numerous spare parts.
Pennsylvania Trojan heavy duty hammermill Size C-3-30 mang. steel hammers. 50 TPH ⅝"

CONCRETE MIXERS

2 Jaeger MDL. 168A, Port. Rubber tired.
Ransome Model 94B, 3 yd. tilting type
Smith 42S, 4 yd. tilting type
Koehring 56B 2 yd non tilting type

TRUCKS—TRANSIT MIXERS

15 Ford F8-6 yd. end dump. Excel. Reinforced, 1955
10 Mack LRSW 32 ton rear dump trucks Cummins NHIRS-600 380 HP Diesel Motor Allison converter-transmission.
6 Euclid 36 TD end dumps 200 HP Cummins Diesel
10 Euclid 28 FD rear dumps 15 ton cap. Cummins
13 Euclids rear dump 12 FD 15 ton; 7 Euclid bottom dump 43 RDT 18 ton
4 Jaeger Transit Mixers 5½ yd. Hi-Dis. New 1957
3 Jaeger 5½ yd Hi-Dis. Autocar.

CRUSHERS—KILNS—DRYERS

JAW: Acme 10x20, 15x36, 14x26, 14x33, 10x42, 14x33, 18x32, 25x40. Eagle 10x16, 20x34. Diamond 24x36". Cedar Rapids 10x20, 15x36, 20x36, 25x40. Farrell 10x20, 18x30, 14x36, 18x36, 36x48. Buchanan Type C 30x42, 36x42. Traylor 18x36, 24x36. Allis-Chalmers 30x18. Good Roads 10x30. Telsmith 18x22. Universal 18x24.
GYRATORY: Al-Chal 6, 7½, 8, 9, 10, 12, 16, 18, 20". Telsmith TY 4', 5' Gyrosphere
25B Kennedy Van Saun 12, 37½, 38, 49¼"
ROLL: Cedar Rapids 40x20. Pioneer 40x22, 30x18, 54x24 triple roll; Telsmith 24x16.
HAMMERMILL: Jeffrey Type B3 24x20, Type B 56x24, 56x36, 36x42. Eagle 24x24, Stedman 24x36, 36", 42". Cedar-Rapids 50-50, 30x33.
BALL MILL: Hardinge conical 10'x48", 8'x48" 8'x36", complete, motors, Traylor 7'x35'.
TUBE MILLS: Smidth 6'6"x21', 5½x20'.
ROD MILL: Marcy 5'x9' center discharge, 5x12, 8'x6' 8½x12' Jackson & Church 4'x10'
AUTOCLAVES: J&C 6'6"x58' Quick Acting; 6'x50'
CONE: Symons 3', 4¼' standard head coarse bowl
KILNS: 4'x42', 5'x30', 6'x50'6", 6'4"x45', 6'x72' Vulcan 9x100, 10'6"x105', 8'x124', 6'x90', 6'x72'.
DRYERS: 6'x60', 6'x72', 5'x24', 4'6"x32', 5'6"x20', 6'x50', 5'x35', 6'x24', 6'x40'
COMPEB MILLS: A-C 7'x24', Patterson 7x18.
FEEDERS: Symtron F55 48x72", 48x60". Jeffrey 35x72". Telsmith 36"x14', Universal 36"x32'.

CRUSHING—WASHING—CLASSIFIER PLANTS

Pioneer #6 Port. Crushing Plant, 10"x18" Model UD-2641H Diesel engine. New 1955.
Pioneer Port. 10x24 jaw 24x16 roll compl. Diesel
C-R 2540 Prim. Port. Diesel
A-W 61E 1024-10C6 jaw crusher
C-R Primary Port. 22x36 Jaw. Diesel.
Eagle 36x25" single screwspiral etc.
Lippman Port. **WASHMORE** washing plant, 36"x 14" sand classifier, 48"x72" revolv. scrubber etc.
Diamond Wee-Con port. Primary 20"x36" crusher
C-R Port. Prim. 20x36" Diesel R. B.
Eagle BMC Log Washer 48"x30' GM Diesel
Eagle 24"x25' dbl. screw washer 15 HP motor

CONCRETE PLANTS AND EQUIPMENT

Noble CA 154 Semi-automatic 150 ton 4 compt. aggregate bulk cement silo 2000 cu. ft.
Erie Strayer port. New 1955, 40 yds. per hr. 600 bbl. cement silo
Johnson 400 yd 5 aggr. 1500 bbls. cement batch 5000 bbl. silo 3-2 yd mixers
Johnson automatic batch 10,000 bbls. cement storage 3-2 yd mixers; screening equipment.
Johnson TY 228 2 compt. agg. w/TY1320 cement unit
Erie—Strayer 2, 50 T. compts. 880 bbls. cement 750 bbl. silo.
Johnson TY-227 70 cu. yd. 105 ton 3 compt. aggr. bin TY168 batcher.
Blaw-Knox BCPC 600 bbl cement silo
B-K BCPC 400 bbl High cement bin 400 bbl silo.
Blaw-Knox BCPC 300 Cement bin
B-K 3 Comp. 200 yd. ag. bin, cement silo 3000 bbls., 2 Koehring 56-S mixers, charging cement hopper 144 bbls.
B-K 2 aggr. one cement 400 bbl silo. Complete

HYDRAULIC SUCTION DREDGES

Morris 6" Diesel on 14'x36' hull
Ga. Iron Works 8" suc. 6" disc. Diesel New 1957.
10" Portable Diesel powered. Complete.
Amsco 12" suc. 10" Dis. Hull 24'x50' Diesel-Elec. New '55.
Ellicott 8" with cutter. Diesel Hull 48'x18'x3'6"
8" Hydraulic Diesel. On 32'x8' steel pontoons
6" portable Diesel complete with cutters, etc.

SCREENS

New Symons 3'x12' 5 HP. Elec. Motor.
Pioneer 5'x12' 3 deck spring suspension
Cedar Rapids 4'x12' dbl. deck 25 H.P. elec. motor
Pioneer 5'x12' 2 deck 20 HP elec. motor
C-R 4'x14' 2 deck 25 HP motor

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CO 7-0723 Cable: RICHWALSH

BELT CONVEYORS

400' long x 30" wide, lightweight belt, has 74 troughing idlers, 42 flat return idlers, head pulley 26" x 32". Drive motor 25 HP. Mounted on steel channel with catwalk.

275' long x 30" wide, lightweight belt, 56 trough idlers, 28 return idlers, head pulley 26" x 32". 25 HP motor.

LOT PRICE $3950.00 FOB trucks.

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P.O. Box 756, Reading, Penna. FRanklin 5-8474

CRUSHERS—PULVERIZERS

CONE, Symons 7' Super Standard
CONE, Symons 3', Portable
GYRATORY, Kennedy, 49, 12½", 100 HP
JAW, Mitchell, 18" x 9", 25 HP
JAW, 20" x 6" Bacon, 30 HP
DOUBLE ROLL, Gruendler, 24" x 24", 20 HP
RING ROLL, Sturtevant, 14" x 9½"
BABCOCK & WILCOX Type E32, 75 HP
RAYMOND, 6 Roll, Low Side, 200 HP
RAYMOND, 3 Roll, #3036 hi-side
HAMMERMILLS, PENNS. C3-30, 60 HP
HAMMERMILL, PENNA. CRUSHER #5060, Series #DNC, 400 HP, non-clog, 1952—UNUSED.
ROBINSON 36" Saw-tooth, 15 HP

DRYERS & KILNS

11' x 155' Traylor Kiln, ¾", Shell.
9' x 100' Kiln, 2-tire Vulcan
8' x 170' kilns, ¾" shell
8' x 125' Vulcan Kiln, ¾" shell
8' x 115' Long—½" shell, 2 tires.
8' x 50' Traylor Kiln ⅝" shell
7'6" x 100' Kiln, ½" shell
6' x 60' Vulcan Kiln, ⅜" shell
8' dia. x 70' L, Ruggles Coles, Double. Shell,
7' x 50' Allis, Double shell dryer, ½"
6' x 50', Louisville dryers
5'6" dia. x 50', Renneburg, ⅜" shell. Dryer
5'6" x 30', ⅜" Shell. Dryer
4'8" x 33', ⅜" Shell. Dryer
4' x 24' L, 5 HP, brick lined kiln.

MILLS

CONICAL BALL, Hardinge 6' x 36", 75 HP
CONICAL BALL, Hardinge 4'6" x 16", 25 HP
COMPEB, Allis Ch., 7' x 24', 450 HP
BALL-TUBE, Allis 5' x 22', 150 HP
BALL, Scrubber, Hardinge 8' x 48"
ROD, Denver 4' x 10', 60 HP (New Gears)
ROD, Kennedy 4' x 8', 50 HP
Ball, Allis 6' x 15', 150 HP
BALL, Marcy No. 64½, 125 HP
ROD, Marcy 7' x 15', 300 HP (4" liners)
Ball, Kennedy 3' x 6', 50 HP

MISCELLANEOUS

BRIQUETTING PRESSES, Komarek Greaves, 75 HP, 50 HP, 10 HP
PUG MILLS, 25, 50, 150 HP
STEEL BINS—up to 200 tons storage, all welded construction
5000'—All steel through belt conveyor, 16" & 24" rubber belts
ALSO—Steel Trough—Belt Conveyors, Bucket Elevators, Steel Screw & Flight Conveyor, etc.

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FLEC AIR COMPRESSORS
2—3078', 2—2200' & 3—3800' Inger. Rand
DIESEL ELEC. LOCOMOTIVES
4—65 ton Whitcomb 2—25 ton & 1—70 Ton
2—45 ton & 1—80 ton & 4—100 ton Gen. Elec.
ROTARY DRYERS & KILNS
36" x 20', 5' x 25', 6' x 72', 9' x 125',
5'x35' Ruggles-Coles XA-8 Dbl. Shell, Comp.
2—10' x 150' Allis-Chalmers Rotary Kilns
33" x 18' Rotary Kiln W/Drive & Burner
REDUCTION MILLS & FEEDERS
5' x 22" Hardinge Ball W/Air Class. Comp.
4' x 8', 6'6" x 14'6" & 8'6" x 12' Rod Mills
5' x 10' Kennedy-Van Saun Rod Mill
1—5'x22" Hardinge Ball Mill W/Air Class. Eqt.
2—No. 77 & 1—96 Marcy Ball Mills
4¼' Symons Std. Cone Crusher
30" x 42" & 24" x 36" Pioneer Jaw Crushers
30" x 36" & 36 x 42 Traylor Jaw Crushers
25B Telsmith Primary Breaker
36" Superior McCully Primary
20" x 36" & 24" x 36" Pioneer Jaw Crusher
14" & 28" New England Rod Machinery
15x24 & 10x36 Cedar Rapids Jaw
3—200 HP & 160 HPSD. Ottumwa Elec. Hoists.
17 Speed Reducers 9.37 to 19.5 H.P.
VIBRATING SCREENS
5' x 12—3 Deck A.C. "Ripl-flo"
4 ELEC. WHIRLEY CRANES
2 Amer. R20-60 Ganty 139' Boom
15 ton AHGD 100' Boom Derrick

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FOUR CRANES & SHOVELS

P&H "105" ½ yd. Trench Hoe, mounted Zaiigson 6x6 Crane Carrier.
Lorain "TL-20" ½ yd. Trench Hoe, Crane, or Shovel.
Insley "K-12" Used ½ yd. Trench Hoe or Crane, 18" shoes, 8'2" wide, new 10/52, M.M. Gas power, hoe attachment rebuilt, bucket is new.
Lorain "TL-25" ¾ yd. Crane or Dragline, Cat D315 power, 1951 model. Rebuilt.

FIVE FRONT END LOADERS

Pettibone "125" Used Speedall, 1½ yd. Tractor-Shovel, 4-wheel drive, Torque-matic Transmission, Hard Rock Lug Tires, Hercules gas. New 8/57.
Hough "HP" Used ¾ yd. Payloader, gas powered.
Terratrac "500" Used Crawler Tractor-Shovel, hyd. controlled.
I-H "I-9" R.T. Gas Tractor w/Hyd. Front End Loader.
Barber-Greene "552" Crawler-Mounted Bucket Loader.

TEN TRANSIT MIXERS

Smith 5 Yd. Mixer, Continental power, sealed hopper, front water entry, un-mounted or mounted on White "2264" Truck.
Smith 5 Yd. Mixer, Continental power, large water tank, rear water entry, sealed hopper, on Dodge Tandem Truck.
Jaeger 5 Yd. Mixer, Continental power, sealed door, rear water entry, mounted LF-172 Tandem Axle Truck*.
Jaeger 5 Yd. Mixer, Continental power, sealed door, rear water entry, very clean and rebuilt.
Jaeger 5 Yd. Mixer, Continental power, open end, rear water entry, mounted LF-192 tandem axle truck*.
Rex 3½ Yd. Mixer, Continental power, large 2-compartment tank, front water entry, sealed hopper. Mounted GMC 6x4 Tandem.
Rex 3½ Yd. Mixer, Chrysler power, 135 gal. mixing tank, front water entry, sealed door, new 1950. S.N. TD1850. Mounted on '53 IHC "LFI74" tandem truck.
Jaeger 3½ Yd. Mixer, sealed hopper, rear water entry, Continental power, on Dodge tandem truck.
Smith 3 Yd. Mixer, S.N. 56170, mounted on Chev. tandem truck.
Rex 2 Yd. Mixer, w/sealed hopper, rear water entry, 65 gallon flush tank, Allis-Chalmers gas power, mounted on L-180 single axle truck.

CRUSHING EQUIPMENT

Dixie Port. Pulverizing Plant, 3x8 Feeder, 3x8 Cedarapids screen, 3030 Dixie mill, 30" under-discharge conveyor, GM "671" diesel power unit. 6 years old. Overhauled.
Gruendler Used Portable Pulverizer Plant, w/3x8 Apron Feeder, Gruendler 3X8 Mill, 30" under-discharge conveyor, 3 axles, 1957 model. Also with Onan 35 KW Generator set on 2 axles. This is a producer and is priced "real right".
Peerless New 24 x 70' Portable Belt Conveyor, gas or electric power, swivel dual wheels. These are the best conveyor for the price!

*NOTE: All this equipment located in our yard except *. Some of this equipment can be rented. Terms!*

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6'-5"x100', 6'x120' & 8'x175' Kilns
#1 Raymond Mills

CRUSHERS

1—40" x 60", 42" x 40", 30" x 36", 24" x 36", 18" x 36", 15" x 30", 12" x 24" Jaw Crushers.
2—42" x 16" Allis-Chalmers Crushing Rolls, rebuilt. 36" x 16 rebuilt Sturtevant rolls.
#636 & #848 Allis-Chalmers Hydrocone Crushers.
1—6", 10", 16", 20" McCully Superior Gyratory Crushers.
No. 3 up to No. 12 Gyratory Crushers.

BALL & TUBE MILLS

2—5½'x20', 5'x22', 6'x22', 7'x24' & 7'x35'

DRYERS

8½'x65' & 8'x60

We make new dryers and kilns.

Have you any machinery that you want to sell?

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22 Ton Euclid Rear Dumps

4 Model 60TD, GM 6-110, 300 HP Engine, 10 Speed Transmission. Standard Bodies with Jalloy Liners and Top Extensions. These Units Are 2½ Years Old and Have Not Been In Continuous Use. Excellent Condition. S/N 18317; 18318; 18319; 18320.

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BARGAINS: 350 CFM Air Comp. 3x8' Feeder CR2036. 2236 **PLANTS.** 8" Dredge **CONVEYORS:** Troughing 18" to 60" wide up to 450' long. Gravity 24" & 36" **DRYERS:** 4x20, 4½x35, 6x50, 8x70, 8x124, 8x170. 300 HP 2 drum. 500 HP sgl. drum **HOISTS.** **SAUERMAN SCRAPERS:** ¾ to 3 yd. **CRUSHERS:** 8x16, 10x20, 1836, 2036, 2436, 3042, 4042 **JAW.** 9 & 12K Gates. 10, 16, 20 McCully. AC322, 636 & 848B. 28", 36", 48", 25ft Telsmith 7½ KVS. **GYR.** 2 & 3' **CONE.** 5424 **DBL ROLL.** **CRANES:** WD2 Browning Wagon, 20 & 30 ton Bridge, 60 ton Brownhoist Loco. 8' x 48" Hardinge **SCRUBBER.** Eagle 24" x 25' **MILLS:** 4½x16", 6x15 Ball. Raymond 66" Roll. Marcy 8x12 Rod. 5x22, 6x22 Tube. CR4033, Gruendler 3XB Dixie 24" Hammer. **SHOVELS:** NW25, 6, 80D, Lima 34, 44, 1201, Lorain 50, 820. Koehring 1065. P&H 955, 1055 620W. Marion 111M, 492. Bucyrus 54B, 120B, 200W. 9W Manitowoc 4500. **CRANE RUNWAY** lattice type 270'

MID-CONTINENT EQUIPMENT CO. INC.

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BELT CONVEYORS

400' long, 30" wide, troughing idlers, cat walk, with 25 HP motor drive.

275' long, 30" wide, troughing idlers, 25 HP drive

GYRATORY CRUSHER

Allis Chalmers 8-K Gates Type

Spare Shaft and mantle.

ROLL CRUSHERS

54 x 24 Traylor Type "AA"

30 x 16 Traylor Type A

36 x 16 Superior double drive

BINS

16' diameter x 14' high (⅝" riveted steel) flat bottoms w/understructure

PUMPS

2500 gpm	DeLaval	(2)	55' head
2100 gpm	DeLaval	(1)	40' head
1100 gpm	DeLaval	(2)	16' head
1000 gpm	DeLaval	(2)	75' head
750 gpm	LeCourtney	(1)	470' head
500 gpm	Union	(1)	254' head
500 gpm	DeLaval	(1)	100' head
425 gpm	DeLaval	(1)	55' head
200 gpm	Dean Hill	(2)	270' head
200 gpm	Barrat	(1)	205' head
175 gpm	Twin Volute	(1)	400' head

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UNIVERSAL 293QH4 **SENIOR PLANT PORTABLE** with 20 x 36 rb. Jaw, 3 x 8 feeder, grizzly, 4x12 2-deck screen, rotovator, 30" conveyors, 26x36 hammermill, two Cat. D337 diesel power units, mounted tandem axles, pneumatic tires, very late model, crushed only 150 thousand tons of soft limestone rock. Excellent. Capacity 80-120 tph 1" minus. Cost over $70,000 Sell $48,500 Terms available.

CEDARAPIDS 3036 Impact Portable Plant with 14' apron feeder, 30" x 30' underconveyor, Murphy ME66 diesel power, tandem rubber, #14066, new 1952, reconditioned. $27,500 Terms.

ROGERS 2-Unit Portable Plant w/1836 rb. Jaw, apron feeder, conveyor, GMC 371 diesel, tandem rubber. Secondary Portable w/3033 hammermill, 4x10 screen, Cat. diesel, rotovator, conveyors, tandem rubber. Fair. $22,000 Rental Purchase.

UNIVERSAL 3240 Impact Crusher, $11,000

UNIVERSAL 1824 r.b. Jaw Crusher, good. $2750 Yard.

VIBRATING SCREENS, Telsmith 5x12 3-deck w/motor, excellent. $3250 Simplicity 4x12 Mdl. D, hvy. duty, factory rebuilt. $2750 Telsmith 3x10 2-deck w/motor, excellent. $1250 Deister 4x8 2-deck, new, save 40%. $2500 Symons 3x10 2-deck flat, good. $750 Simplicity 4x8 3-deck. $1500.

TELSMITH 42"x12' apron feeder, good. $2000 Yard.

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LINK BELT LS85 Shovel, ¾ cy. heavy duty, #7A1324, new 1950, w/Cat 318 diesel, bargain. $6850 Yard.

LIMA 34 Paymaster Shovel

KOEHRING 1005 Shovel, 2½ cy, #6859, w/new Buda 1879 supercharged diesel, reconditioned, very good. $19,000 Terms.

SHOVEL FRONTS for P&H 655B, new & complete. $4850 P&H 655A, good. $1950 Bucyrus 22B, new. $1500 Unit 1020A, new. $1250 N.W. 25, complete, excellent. $1750 Yard.

SHOVEL BUCKETS for P&H 655, new, bargain. $1000 Yard.

UNIVERSAL 293Q Portable Plant w/1824 rb. Jaw, apron feeder, 3018 rb. roll, 3x10 2-deck screen, rotovator, plant & Delivery conveyor, tandem rubber, UD24 IHC diesel. $15,000 Rental Purchase.

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60"x48" to 6"x3"

New and used RELIABLE

"Farrel-Bacon" Jaw Crushers

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HEAVY EXCAVATION EQUIPMENT

Shovels—Cranes—Drills—Euclids

15-W Bucyrus Erie Elec. Drag, 215', 13 yd.
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4161 Marion 6 yd. Elec. Shovel
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120-B Bucyrus Erie 4 yd. Elec. Shovel
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Large selection of smaller Shovels & Draglines available
Model T-750 Reich Truck Mounted Rotary and Down-the-Hole Drill
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Euclid trucks, truck cranes, dozers, scrapers, front end loaders, attachments and other misc. equipment available

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1 Ton McCarter Asphalt Mixing Tower complete with Robbins 3 x 10 D Deck Screen, Howe Dial Scales, Modern asphalt spray type weigh bucket, 60 ton per hour elevator—Available for immediate delivery.

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Shovel front complete w/dipper sticks—For Osgood Chief Type 90 machine—In excellent condition.

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- 35' Universal conveyor
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- Scout backhoe
- A-W ½-yd. shovel
- Lorain 20 ton truck crane
- HD-10 Allis Chalmers dozer
- Bay City 25, ½ yd. dragline
- Unit #614 ½ yd. dragline
- Austin 8 ton roller KT-142
- Michigan truck crane T-6K
- #514 Unit backhoe ½ yd.
- 30"x20' Pioneer conveyor
- 30"x73' Barber-Greene Conveyor
- 30"x38' portable conveyor
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DEPENDABLE USED MACHINES

Shovel front for Lorain 77B 1½ yd. w/PM shovel bucket

This equipment rebuilt in our modern plant by expert mechanics. Come see it!

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All sizes, new and rebuilt. Starters, accessories, pulleys and repair parts. Gear motors, Falk Shaft mounted Speed Reducers, couplings and V-belt drives.

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48"x60" Allis Chalmers Blake Jaw Crusher
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30"x36" Traylor Blake Jaw Crusher
10"x36" Buchanan Blake Jaw Crusher
15"x24" Buchanan Blake Jaw Crusher
10"x20" Power Blake Jaw Crusher
24"x36" Farrell 14B Blake Jaw Crusher
30"x42" Buchanan Jaw Crusher
10"x24" Universal Jaw RB Crusher
2—28"x36" Traylor Blake Jaw Crushers
2—36"x48" Traylor Blake Jaw Crushers
3—24"x54" Allis Chalmers Rolls
25"x36" Telsmith over head eccentric Jaw Crusher
18"x32" Ditto
9"x36" Ditto
10"x36" Ditto
2—28" Telsmith Intercone Crushers
36" Telsmith Gyrasphere Crusher
36" Symons Cone Crusher
10"x40" Good Roads Jaw Crusher
18"x30" Telsmith rolls, smooth shell
14" Telsmith Gyratory Crusher
22" Telsmith Gyratory Crusher
13" Telsmith Gyratory Crusher

BLUE BALL MACHINE WORKS
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1—13" x 30" Type B Farrel Bacon Jaw Crusher
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1—36" Telsmith Gyrasphere Crusher plus many repair parts
1—3' x 8' Hardinge Rod Mill & spare liners
1—36" x 20' Revolving Screen
1—36" x 11' Revolving Screen with Scrubber
1—30" x 14' Revolving Screen
1—3' x 5' Link-Belt Foundry Shakeout Screen
New All-Steel & Manganese J. & H. Hammer Mills 5½" x 18"

We build open and totally enclosed bucket elevators and belt conveyors to suit your needs.

Large stock chain, sprockets, buckets and conveyor pulleys—new and used.

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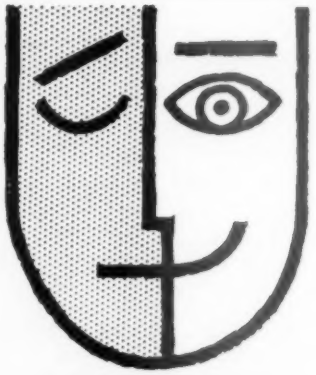

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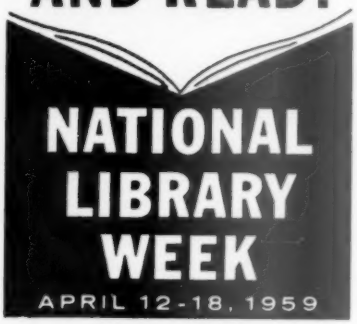

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___Bags
___Barges
___Belting, Conveyor
Elevator, Power Transmission
___Belting, V-type
___Belt Repair Equipment
___Bin Level Indicators
___Bins and Batching Equipment
___Bits
___Blasting Supplies
___Bodies, Trailer
___Buckets
___Bulldozers
___Cars, Industrial
___Classifiers
___Clutches
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___Concentrating Tables
___Conveyors
___Crushers
___Coolers
___Cranes
___Derricks
___Dewatering Equipment, Sand
___Diesel Engines
___Dragline Cableway Excavators
___Draglines
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___Gypsum Plant Machinery
___Hard Surfacing Materials
___Hoists
___Hoppers
___Kilns: Rotary, Shaft, Vertical
___Locomotives
___Lubricants
___Magnetic Separators
___Mills
___Pipe
___Pumps
___Scales
___Screen Cloth
___Screens
___Scrubbers: Crushed Stone, Gravel
___Shovels, Power
___Speed Reducers
___Tanks, Storage
___Tires and Tubes
___Torque Convertors
___Tractor Shovels
___Tractors
___Trailer Dump Bodies
___Trucks, Bulk Cement
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___Trucks, Mixer Body
___Trucks, Motor
___Valves
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___Winches
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___Wire Rope

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___Crushed Stone
___Sand & Gravel
___Slag
___Cement
___Lime
___Gypsum
___Ready Mix Concrete
___Concrete Products
Type_____
Other nonmetallic mineral (What?)_____

All above information is strictly confidential to be used to guide the manufacturers in supplying proper information.

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NOTE: See—Where to Buy-Classified Advertising Section for used equipment and complete plant information

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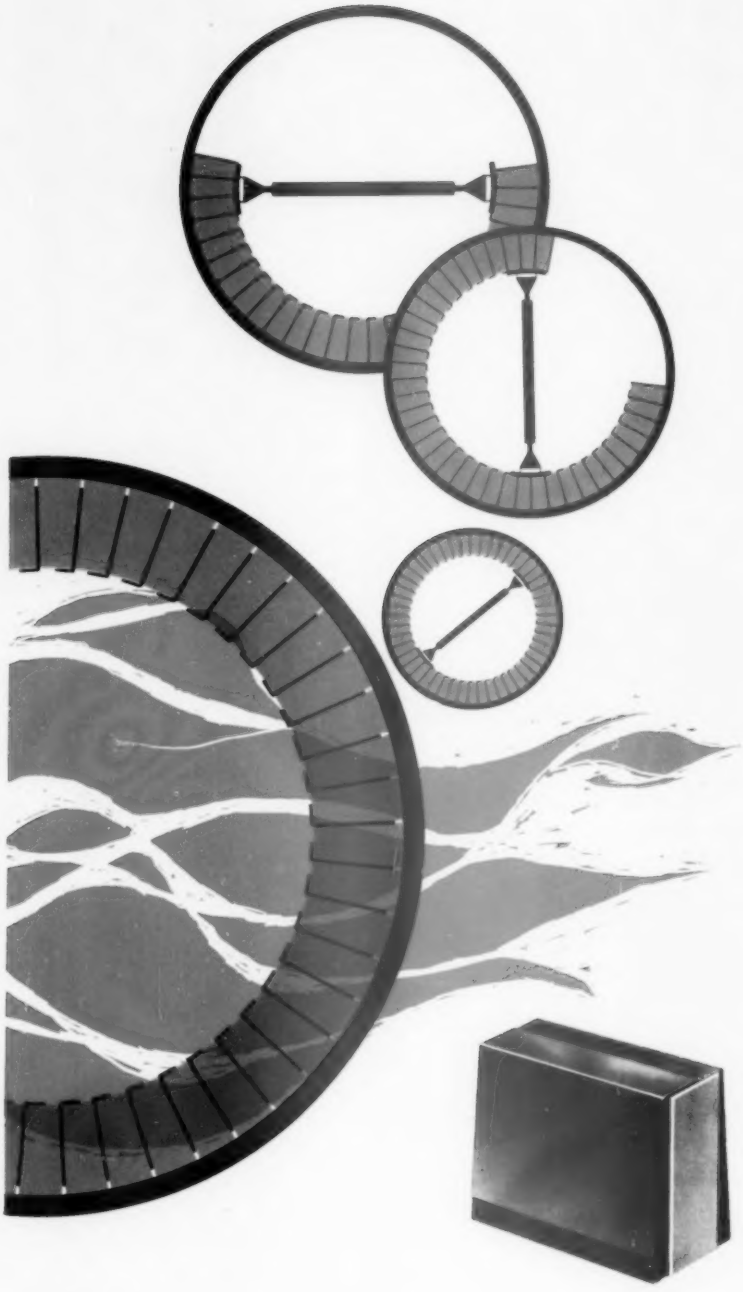

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